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Application Number

09/998,681

Filing Date

11/30/2001

First Named Inventor

Cheston et al.

Art Unit

2135

Examiner Name

Ponnoreay Pich

Attorney Docket Number

RPS920010106US1 (44458-P017US)

ENCLOSURES (Check all that apply)

Fee Transmittal Form



Fee Attached



Amendment/Reply



After Final



Affidavits/declaration(s)



Extension of Time Request



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Information Disclosure Statement



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Kelly K. Kordzik

Date

November 17, 2005

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36,571

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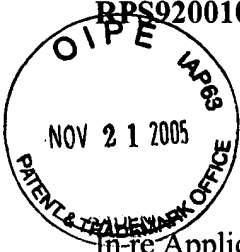
Wanda Kellar

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November 17, 2005

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- 1 -

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In-re Application of:	:	Before the Examiner:
Cheston et al.	:	Pich, Ponnoreay
	:	
Serial No.: 09/998,681	:	Group Art Unit: 2135
	:	
Filing Date: November 30, 2001	:	
	:	Lenovo (United States), Inc.
Title: SYSTEM AND METHOD	:	P.O. Box 12195
FOR MIGRATION OF A	:	Dept. 9CCA, Bldg. 002-2
VERSION OF A BOOTABLE	:	Research Triangle Park, NC 27709
PROGRAM	:	

APPEAL BRIEF

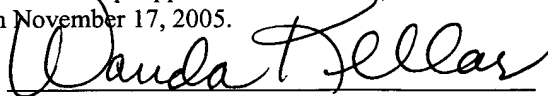
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I. REAL PARTY IN INTEREST

The real party in interest is Lenovo (United States), Inc., which is the assignee of the entire right, title and interest in the above-identified patent application.

CERTIFICATION UNDER 37 C.F.R. § 1.8

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to Mail Stop Appeal Brief – Patents, Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450, on November 17, 2005.


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II. RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences known to Appellants, Appellants' legal representative or assignee which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

III. STATUS OF CLAIMS

Claims 1-54 are pending in the Application. Claims 1-54 stand rejected. Claims 1-54 are appealed.

IV. STATUS OF AMENDMENTS

Appellants have submitted one amendment following receipt of the final rejection with a mailing date of August 23, 2005. The objections to the specification have been addressed by Appellants in the amendment filed under 37 C.F.R. §1.116, mailed on October 7, 2005.

V. SUMMARY OF CLAIMED SUBJECT MATTER

In one embodiment of the present invention, a method for booting a computer system with first and second versions of a bootable program (BP) may comprise the steps of: loading both versions into partitions of a storage device; hashing a boot record of both versions to produce first and second digests; signing both digests cryptographically using a private key to produce first and second signatures; storing both signatures and other data into first and second entries in non-volatile memory (NVM); assigning the first partition as active by updating an entry in a partition table of a master boot record (MBR), wherein the partition entry indicates which version of said BP is booted; assigning said first entry in NVM as an active entry; and assigning said second entry in NVM as an alternate entry. Specification p. 4, lines 2-14; Specification p. 10, lines 6-28; Specification p.12, lines 8-15; Claim 1; Figure 3, steps 302-305. The method may further comprise the step of locking the entries in NVM. Specification p.4, lines 15-16; Specification p. 10, lines 28-29; Specification p. 12, lines 15-16; Claim 2; Figure 3, step 306. The method may comprise a BP that is an operating system. Specification p. 4, line 3; Specification p. 6, lines 23-25; Claim 3; Figure 3. The method may further comprise the steps of: loading a BR from MBR using Power-On Self Test (POST) during power up; decrypting said first signature in said active entry using a public key; comparing the hash from said BR with the

hash from said active entry; booting with said first BP version when said first compare result is true; and retrieving said second signature from said alternate entry when said first compare result is false. Specification, p. 4, lines 16-23; Specification p. 11, lines 1-6; Specification p. 12, line 26 to p. 13, line 8; Claim 4; Figure 4, steps 401-407. The method may further comprise the steps of: decrypting said second signature in said alternate entry using a public key; comparing the hash from said BR with the hash from said alternate entry; clearing said active entry when said second compare is true; moving the contents from said alternative entry to said active entry; and booting with said alternate version. Specification p.4, lines 23-26; Specification p. 11, lines 5-11; Specification p. 13, lines 7-16; Claim 5; Figure 4, steps 407-413. The method may further comprise the step of halting POST when said second compare yields false. Specification p. 11, lines 7-8; Specification p. 13, lines 17-18; Claim 6; Figure 4, step 410. The method may further comprise the step of monitoring a third entry of said NVM for an indication of validity. Specification p. 4, lines 25-26; Specification p. 14, lines 22-28; Claim 7; Figure 7, step 704. The method may further comprise the step of moving the contents from said second entry to said first entry, if said third entry is valid.¹ Specification p. 14, line 27 to p. 15, line 3; Claim 8; Figure 7, steps 704-705. The method may further comprise the steps of: moving the contents of said third entry to said second entry; marking said second partition as said active entry in the MBR; and booting the version of the BP in said active partition. Specification p. 15, lines 3-5; Claim 9; Figure 7, steps 706-707, and 710. The method may further comprise locking said first and second entries in said NVM. Specification p. 15, lines 5-7; Claim 10; Figure 7, step 712.

The invention embodied in the aforementioned method may be implemented in an analogous embodiment as a computer system, which practices the same principles. Specification p. 11, lines 16-26. Specification p. 16, line 16 to p. 16, line 19; Claims 11-20; Figures 1, 2, and 5. The invention embodied in the aforementioned method may be implemented in an analogous embodiment as a computer program product, which practices the same principles. Specification p. 11, lines 16-26. Specification p. 16, line 16 to p. 16, line 19; Claims 21-30; Figures 1, 2, and 5.

In another embodiment of the present invention, a method for booting a computer system with first and second versions of a BP may comprise the steps of: loading both versions into partitions of a storage device; identifying said first version as an active partition in an MBR;

¹ Page 14, line 28 of the Specification erroneously refers to step 604, instead of step 704. Upon allowance, Appellants will amend the Specification accordingly.

maintaining a version management table in NVM, wherein data in a first entry indicates which version of said BP corresponds to an active version and data in a second entry corresponds to an alternate version; comparing data in said active entry in said version management table to data from said active partition entry of said MBR and returning a first compare result; and booting with said version in said active partition if said first compare result is true. Specification p. 13, line 24 to p. 14, line 10; Claim 31; Figure 6, steps 601-605, 608, and 607. The method may further comprise locking said active and alternate entries in said version management table. Specification p. 14, lines 7-9; Claim 32; Figure 6, step 609. The method may comprise a BP that is an operating system. Specification p. 4, line 3; Specification p. 6, lines 23-25; Claim 33; Figure 3. The method may further comprise the steps of: replacing data in said active entry with data in said alternative entry if said first compare result is false; comparing data in said active entry to data related to said active partition entry of said MBR and returning a second compare result; and booting with said alternate version if said compare result is true. Specification p. 14, lines 15-21 and 9-10; Claim 34; Figure 6, steps 612, 607. The method further comprises the step of stopping booting if said second compare result is false. Specification p. 14, lines 13-14; Claim 35; Figure 6, step 611. The method further comprises instances wherein said active partition related to said active entry in said MBR is changed in response to a version management command sequence. Specification p. 4, lines 26-28; Specification p. 16, lines 1-9; Claim 36; Figure 8, step 804. The method may further comprise instances where the first and second compare steps are performed by Power-On-Self-Test (POST). Specification p. 16, lines 10-12; Claims 37-38; Figure 8, step 806. The method may further comprise the step of determining whether the contents of a third entry in NVM are valid. Specification, p.14, lines 22-28; Claim 39; Figure 7, step 704. The method may further comprise the step of moving the content of said alternate entry to said active entry when said contents of said third entry are valid. Specification p.15, lines 1-3; Claim 40; Figure 7, step 705. The method may further comprise the steps of: moving the contents of said third entry to said alternate entry; marking a second partition corresponding to said second version of said BP as said active partition said MBR; and booting the BP from the active partition. Specification p. 15, lines 3-7; Claim 41; Figure 7, steps 706, 707, 710. The method may further comprise the step of locking said active and alternate entries in NVM. Specification p. 15, lines 5-6; Claim 42; Figure 7, step 712.

The invention embodied in the aforementioned method may be implemented in an analogous embodiment as a computer system, which practices the same principles. Specification p. 11, lines 16-26. Specification p. 16, line 16 to p. 16, line 19; Claims 43-54; Figures 1, 2, and 5.

VI. GROUND OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1, 3, 7-9, 21, 23, 27-29, 31, 34-36, and 39-41 are rejected under 35 U.S.C. §103(a) as being unpatentable over *Booting Multiple Operating Systems with LILO*, Steve Limkemann, stevelim@wwnet.net, Westland, MI, March 3, 2000 (as referred to in the Examiner's Office Action as <http://web.archive.org/web/19990225080749/http://www.wwnet.net/~stevelim/booting.html>), hereinafter referred to as *Stevelim*, in view of *Lovelace* et al. (U.S. Patent 6,263,431), hereinafter referred to as *Lovelace*. Claims 11, 13, 17-19, 43, 46-48 and 51-53 are rejected under 35 U.S.C. §103(a) as being unpatentable over *Stevelim* in view of *Lovelace* further in view of *Rickey* et al. (U.S. 2002/0166059), hereinafter referred to as *Rickey*. Claims 2, 10, 22, 30, 32-33, and 42 are rejected under 35 U.S.C. §103(a) as being unpatentable over *Stevelim* in view of *Lovelace* and further in view of Appellants' admittance of prior art. Claims 12, 20, 44-45, and 54 are rejected under 35 U.S.C. §103(a) as being unpatentable over *Stevelim* in view of *Lovelace* and *Rickey* and further in view of Appellants admittance of prior art. Claims 4-6, 24-26, and 37-38 are rejected under 35 U.S.C. §103(a) as being unpatentable over *Stevelim* in view of *Lovelace* and further in view of *Schieve* et al. (U.S. Patent 5,463,766), hereinafter referred to as *Schieve*. Claims 14-16 and 49-50 are rejected under 35 U.S.C. §103(a) as being unpatentable over *Stevelim* in view of *Lovelace* and *Rickey* and further in view of *Schieve*.

VII. ARGUMENT

- A. Claims 1, 3, 7-9, 21, 23, 27-29, 31, 34-36, and 39-41 are not properly rejected under 35 U.S.C. §103(a) as being unpatentable over *Stevelim* in view of *Lovelace*.

Claims 1, 3, 7-9, 21, 23, 27-29, 31, 34-36, and 39-41 are rejected under 35 U.S.C. §103(a) as being unpatentable over *Stevelim* in view of *Lovelace*. See Office Action from 08/23/2005, p. 15.

- A.1. The Examiner has provided neither sufficient motivation nor a source of motivation for combining *Stevelim* with *Lovelace*.

A *prima facie* showing of obviousness requires the Examiner to establish, *inter alia*, that the prior art references teach or suggest, either alone or in combination, all of the limitations of the claimed invention, and the Examiner must provide a motivation or suggestion to combine or modify the prior art reference to make the claimed inventions. M.P.E.P. §2142. The showings must be clear and particular and supported by objective evidence. *In re Lee*, 277 F.3d 1338, 1343, 61 U.S.P.Q.2d 1430, 1433-34 (Fed. Cir. 2002); *In re Kotzab*, 217 F.3d 1365, 1370, 55 U.S.P.Q.2d 1313, 1317 (Fed. Cir. 2000); *In re Dembiczak*, 50 U.S.P.Q.2d 1614, 1617 (Fed. Cir. 1999). Broad conclusory statements regarding the teaching of multiple references, standing alone, are not evidence. *Id.* In order to establish a *prima facie* case of obviousness, it is necessary for the Examiner to present objective evidence, preferably in the form of some teaching, suggestion, incentive or inference in the applied prior art. *Ex parte Levengood*, 28 U.S.P.Q.2d 1300, 1301 (BPAI 1993); *Ashland Oil, Inc. v. Delta Resins and Refractories, Inc.*, 776 F.2d 281, 227 U.S.P.Q. 657 (CA FC 1985).

The Examiner recites the ostensible motivation for modifying *Stevelim* with *Lovelace* in construing the rejection to claims 1 and 21 as:

It would have been obvious ... to modify boot managers (such as lilo) as disclosed by *Stevelim* according to the limitations recited in claims 1 and 21 in light of *Lovelace*'s teachings. One ... would have been motivated to do so as *Lovelace*'s teachings provide the ability to verify the integrity of the boot components prior to the use of the boot components (col 1, lines 4-7). This would allow the multiple OS boot managers disclosed by *Stevelim* to check to make sure that a virus hasn't corrupted the boot components of any of the operating systems they were managing. Note that because *Stevelim*'s boot manager handles multiple OS's, that when the boot record of each OS gets hashed and stored in memory, one of the things that must get hashed is the status of the OS—i.e. is the OS set active or as an alternate. See Office Action from 08/23/2005, p. 17, emphasis added.

Appellants respectfully traverse. The cited passage merely states that the invention of *Lovelace* "relates to the field of operating systems; more particularly, ...to a method and apparatus for

operating system bootstrap security." *Lovelace*, col. 1, lines 6-10. However, there is no mention in *Stevelim* of bootstrap security, and *Lovelace* does not teach or suggest a method that is operable for securing multiple boot programs. Examiner has not presented a source for his motivation for modifying *Stevelim* with *Lovelace*, precisely along the lines of Appellant's invention, other than the Examiner's unsupported subjective opinion, which is not objective evidence. The nature of the problem to be solved in Appellant's invention is a controlled, secure, and automatic migration of a bootable program from one version to the next, and a suitable switching mechanism therefor. Background Information, p. 1, line 9 to p. 2, line 13. The teachings of the prior do not suggest combining *Stevelim* with *Lovelace* to arrive at the subject matter disclosed in claims 1 and 21. Neither *Stevelim* nor *Lovelace* teach or suggest a solution to the problem that Appellant's are addressing with the invention. Appellants respectfully assert that the knowledge of an artisan with ordinary skill in the art would not suffice for combining and modifying *Stevelim* and *Lovelace* to arrive at the invention recited in claims 1 and 21. The motivation to modify *Stevelim* with *Lovelace* [to arrive at the limitations in claims 1 and 21] must come from one of three possible sources: the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons of ordinary skill in the art. *In re Rouffet*, 149 F.3d 1350, 1357, 47 U.S.P.Q.2d 1453, 1457-58 (Fed. Cir. 1998). The Examiner has not provided any evidence that his motivation to modify the references to arrive at the limitations in claims 1 and 21 comes from any of these sources. Instead, the Examiner is relying upon his own subjective opinion which is insufficient to support a *prima facie* case of obviousness. *In re Lee*, 61 U.S.P.Q.2d 1430, 1434 (Fed. Cir. 2002).

Furthermore, the combination of *Stevelim* and *Lovelace* cited by the Examiner would require substantial redesign and modification of the references to arrive at the claimed invention. *Stevelim* would require substantial modification and redesign, at least because *Stevelim* does not teach or suggest authentication of boot components, storage in non-volatile memory, and determining which BP to boot in response to authentication results. *Lovelace* would require substantial modification and redesign, at least because *Lovelace* does not teach or suggest a method for securing boot components for multiple loaded versions of a boot program, and determining which BP to boot in response to authentication results. Such substantial modifications required of both *Stevelim* and *Lovelace* to arrive at Appellant's invention would require a change in the principle of operation of each of these references. If the proposed

modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959), M.P.E.P. §2143.02.

Furthermore, absent knowledge of Appellant's invention, there is simply no suggestion or motivation for one of ordinary skill in the art, faced with *Stevelim*, to seek out and combine with *Lovelace* in order "to check to make sure that a virus hasn't corrupted the boot components." See Office Action from 08/23/2005, p. 17. For instance, the Examiner has provided no suggestion or motivation why one of ordinary skill in the art would not use another commonly known method, such as widely available tools and utilities (from Norton, Symantec, etc.) to more easily secure a given boot program from viruses, which would not mandate the combination of *Stevelim* and *Lovelace*. The above cited source of the motivation to combine does not provide a reason why one of ordinary skill in the art would arrive at precisely the methods in claims 1 and 21, since

hashing a boot record (BR) of said first and second versions of said bootable program producing respective first and second digests;

signing said first and second digests using a cryptographic signature engine and a private installation key producing first and second signatures;

storing said first and second signatures with additional data defining said first and second versions of said bootable program in first and second entries in a non-volatile memory coupled to said computer system;

assigning said first partition as an active partition of said storage device by updating an active partition entry of a partition table of a master boot record (MBR) of said storage device, said active partition entry indicating which version of said BP is booted on a power up of said computer system;

assigning said first entry corresponding to said first version of said bootable program as an active entry in said non-volatile memory; and

assigning said second entry corresponding to said second version of said bootable program as an alternate entry in said non-volatile memory,

as in claims 1 and 21, are not required (and certainly not obvious) steps for securing a boot program from viruses. The Examiner states that "...both *Stevelim* and *Lovelace* were from the art of managing the boot of multiple operating systems, so are analogous arts." See Office Action from 08/23/2005, p. 7, emphasis added. Appellants respectfully traverse. There is no language in *Lovelace* teaching or suggesting managing the boot of multiple boot programs; *Lovelace* refers to the boot program only in the singular. *Lovelace*, col. 2, lines 5-8; col. 2, lines 51-52; Fig. 3, element 350; Claim 1. Consequently, Appellants respectfully assert that *Stevelim* and *Lovelace*

are from nonanalogous fields, and that neither *Stevelim* nor *Lovelace* pertain to solving Appellant's stated problem, that is, providing a switching mechanism for migrating a version of a bootable program to another version. Background Information, p. 1, line 9 to p. 2, line 13. In order to rely on a reference as a basis for rejection of an applicant's invention, the reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned. *In re Oetiker*, 977 F.2d 1443, 1446, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992). *See also In re Deminski*, 796 F.2d 436, 230 USPQ 313 (Fed. Cir. 1986); *In re Clay*, 966 F.2d 656, 659, 23 USPQ2d 1058, 1060-61 (Fed. Cir. 1992), M.P.E.P. § 2141.01(a). In response to Appellants' previous arguments (submitted on 07/07/2005), the Examiner responds with "... one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co., Inc.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986)," *See Office Action* from 08/23/2005, p. 7, cited from M.P.E.P. §2145, IV. However, examination of the cited case law reveals that the standard for what constitutes analogous art (or reasonable pertinence to Appellant's endeavor) does not support the combination of *Stevelim* and *Lovelace* as analogous art in construing the present obviousness rejections.^{2,3} The case law has determined that a general relatedness of the fields does not provide sufficient motivation to combine prior art references.⁴ The source of the Examiner's motivation to combine *Stevelim* and *Lovelace* to arrive at the limitations in claims 1 and 21

² *See In re Keller* 642 F.2d 413, 208 USPQ 871 (CCPA 1981) ("Both Keller and Berkovits disclose heart stimulators that use R-C type timing circuits, and Walsh teaches the use of digital type timing circuits in place of R-C type timing circuits in conventional heart stimulators.")

³ *See In re Merck & Co.* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986) ("As found by the Board, the Roche Reports recognized the structural relationship between amitriptyline and imipramine and concluded that amitriptyline should be tested for its anti-depressant activities. The prior art showed that one such technique was "bioisosteric replacement" or the theory of bioisosterism -- where the substitution of one atom or group of atoms for another atom or group of atoms having similar size, shape and electron density provides molecules having the same type of biological activity. Finding that the Friedman, Burger and Petersen references taught that bioisosterism was commonly used by medicinal chemists prior to 1959 in an effort to design and predict drug activity, the Board concluded that one of ordinary skill in the arts would have been aware of this technique at the time of appellant's invention.")

⁴ *See Interactive Techs. Inc. v. Pittway Corp.*, 194 F.3d 1337, 1999 WL 379139 (Fed. Cir.) ("...there was substantial evidence upon which a reasonable jury could have relied to find that the motivation to combine these prior art references was not proven by clear and convincing evidence. The sole evidence proffered of a motivation to combine was that several prior art patents mentioned there being a similarity between garage door openers and home security systems. However, such limited evidence of there being a general relationship between the fields does not suggest a motivation to combine the particular reference here relied upon....")

appears thus to be gleaned directly from Appellant's disclosure, despite the Examiner's above cited statement that the motivation arises from a desire to protect against viruses. The Examiner may not use the application as a basis for the motivation to combine or modify the prior art to arrive at the claimed invention. *ACS Hosp. Sys., Inc. v. Montefiore Hosp.*, 732F.2d 1572, 221 USPQ 929 (Fed. Cir. 1984).

Further, the Examiner's statement that "when the boot record of each OS gets hashed and stored in memory, one of the things that must get hashed is the status of the OS," *see* Office Action from 08/23/2005, p. 17, emphasis added, purports that

hashing a boot record (BR) of said first and second versions of said bootable program producing respective first and second digests;

signing said first and second digests using a cryptographic signature engine and a private installation key producing first and second signatures;

storing said first and second signatures with additional data defining said first and second versions of said bootable program in first and second entries in a non-volatile memory coupled to said computer system,

as recited in claims 1 and 21, are mandatory, ergo obvious, methods for checking the integrity of boot components to one of ordinary skill in the art. Appellants respectfully traverse and assert that no support for the Examiner's statement is provided in the prior art. Instead, the Examiner's statement is evidence of the impermissible reasoning applied by the Examiner, namely with full knowledge of Appellant's invention, in construing the obviousness rejection. The Examiner appears to impermissibly use the claim limitations as a guide for retroactively construing obviousness from a modification of the combination, without any objective evidence or prior art which supports either the combination or the modification of the combination. Impermissible hindsight must be avoided and the legal conclusion [of obviousness] must be reached on the basis of the facts gleaned from the prior art. M.P.E.P. §2142. As a result of the foregoing, the Examiner's motivation to combine *Stevelim* with *Lovelace* is insufficient to support a *prima facie* case of obviousness for rejecting claims 1 and 21.

Regarding the rejection to claims 7 and 27, the Examiner states that:

Stevelim and Lovelace do not explicitly disclose monitoring a third entry of said non-volatile memory for an indication said third entry is valid....One of ordinary skill would be motivated on the indication that an entry/OS boot component is corrupted to monitor other OS's boot components to see if there are any chance [sic] one of the other OS's boot components aren't corrupted and one of the other OS's could be booted to from which repairs could be effected. It would have been obvious ... that if there existed a third entry/OS to also monitor the third entry of said non-volatile memory for an indication said third entry is valid. One ... would be motivated to do so as it would help determine if the third OS could be used

to effect repairs on damages that were possibly done by viruses. *See* Office Action from 08/23/2005, p. 18, emphasis added.

Note that it would have been just as obvious for one ... to have a boot manager which manages a maximum of just two OS's as opposed to the ones disclosed by *Stevelim* which can handle more than two. Should one ... decide to make a boot manager handle only two OS's then it would be obvious that if there was a third entry in the non-volatile memory that was also valid, then it would be obvious that one ... most likely want [sic] to replace one of the two previous OS with a third one. The choice of which one to replace is arbitrary, although one ... would be most likely to replace the oldest one first—usually the first one. It would have been obvious to one ... in the art to monitor a third entry of said non-volatile memory for an indication said third entry is valid as it would allow for a way to replace on of the previous two OS entries with the third entry. *See* Office Action from 08/23/2005, p. 18-19, emphasis added.

Despite the Examiner's admission that neither reference teaches the claim limitations, claims 7 and 27 are rejected based on the combination, and the implicit modification of the combination, of *Stevelim* and *Lovelace*. Appellants respectfully traverse. The Examiner has not presented a source for his motivation for combining *Stevelim* with *Lovelace* in rejecting claims 7 and 27, other than the Examiner's unsupported subjective opinion, which is not objective evidence. The Examiner has not provided any evidence that his motivation comes from any permissible source as defined by the case law. The Examiner's statement "if there existed a third entry/OS to also monitor the third entry of said non-volatile memory for an indication said third entry is valid," *see* Office Action from 08/23/2005, p. 18, is further evidence that the logic applied in construing the rejection explicitly relies on knowledge gleaned from Appellant's disclosure, because neither *Stevelim* nor *Lovelace*, nor the prior art, teaches or suggests monitoring a third entry in a non-volatile memory for an indication said third entry is valid, as in claims 7 and 27. Any judgment on obviousness must not include knowledge gleaned from Appellants' disclosure. *In re McLaughlin*, 170 U.S.P.Q. 209, 212 (C.C.P.A. 1971). Further, the Examiner appears to impermissibly use the claim limitations as a guide for retroactively construing obviousness from a modification of the combination, without any objective evidence or prior art which supports either the combination or the modification of the combination. One motivation for modifying the combination of *Stevelim* and *Lovelace* cited by the Examiner is that "...it would help determine if the third OS could be used to effect repairs on damages that were possibly done by viruses," *See* Office Action from 08/23/2005, p. 18. However, absent a source of motivation, the Examiner has not shown why one would require a third entry of said non-volatile memory for this purpose. The Examiner has also interpreted the existence of a third OS, where none is cited in the prior art or in Appellants disclosure. Consequently, the Examiner's motivation to combine

Stevelim with *Lovelace* is insufficient to support a *prima facie* case of obviousness for rejecting claims 7 and 27. M.P.E.P. §2145.

Regarding the rejection to claims 8 and 28, the Examiner also uses the ostensible motivation to combine *Stevelim* and *Lovelace* that:

Stevelim and Lovelace do not explicitly disclose moving contents of said second entry to said first entry in response to said valid indication. However, it would have been obvious for one ... to do so as it would allow for a way to replace one of the previous two OS entries with the third entry for boot managers that only handles [sic] two OS's. The choice of replacing the first entry as opposed to the second is arbitrary although the first one is usually the oldest and the oldest software is usually replaced first See Office Action from 08/23/2005, p. 19, emphasis added.

Appellants respectfully traverse. The Examiner has not presented a source for his motivation for modifying *Stevelim* with *Lovelace*, other than the Examiner's unsupported subjective opinion, which is not objective evidence. The Examiner has not provided any evidence that his motivation comes from any permissible source as defined by the case law. Even though the Examiner admits that neither reference teaches these claim limitations, the combination is improperly applied in construing a case of obviousness in rejecting claims 8 and 28. The Examiner's statement that "as it would allow for a way to replace one of the previous two OS entries with the third entry for boot managers...", see Office Action from 08/23/2005, p. 18, is clear evidence that the limitations in claims 8 and 28 are being improperly used as a template to formulate and justify an obviousness rejection against these claims. Any judgment on obviousness must not include knowledge gleaned from Appellants' disclosure. *In re McLaughlin*, 170 U.S.P.Q. 209, 212 (C.C.P.A. 1971). The Examiner is using the resulting functionality of the method of claims 8 and 28 as justification for the obviousness rejection, by implicitly modifying the combination of *Stevelim* and *Lovelace* to arrive at Appellant's invention. The Examiner's questionable logic is clear evidence of impermissible hindsight in construing the rejection to claims 8 and 28 based on an unsupported combination of *Stevelim* and *Lovelace*. Consequently, the Examiner's motivation to combine *Stevelim* with *Lovelace* is insufficient to support a *prima facie* case of obviousness for rejecting claims 8 and 28. M.P.E.P. §2145.

Regarding the rejection to claim 31, the Examiner also uses the ostensible motivation to combine *Stevelim* and *Lovelace* that:

It would have been obvious ...to incorporate Lovelace's teachings with Stevelim according to the limitations recited in claim 31. One ... would have been motivated to do so as it would allow for the boot managers disclosed by Stevelim to verify the integrity of the boot components of the BP before booting into the actual BP, thereby preventing possible infections by

viruses. Note that the version management table that existed in boot managers disclosed by Stevelim must also exist in some form in the non-volatile memory once one ... incorporate [sic] Lovelace's teachings with Stevelim to arrive at a multiple OS boot manager capable of detecting corrupted boot components. If it did not exist in the non-volatile memory, then the system would have no way of determining which boot component is corrupted for which OS. See Office Action from 08/23/2005, p. 22.

Appellants respectfully traverse. The Examiner has not presented a source for his motivation, "preventing possible infections by viruses," for modifying *Stevelim* with *Lovelace*, other than the Examiner's unsupported subjective opinion, which is not objective evidence. The Examiner has not provided any evidence that his motivation comes from any permissible source as defined by the case law. The logic applied by the Examiner, if one element in the claimed invention did not exist, then another feature in the claimed invention would not be operable, does not justify a finding of obviousness, but rather provides evidence of non-obviousness of the claimed invention. The Examiner's statements (shown emphasized) are evidence that the limitations in claim 31 are being improperly used as a template to formulate and justify an obviousness rejection against claim 31. Any judgment on obviousness must not include knowledge gleaned from Appellants' disclosure. *In re McLaughlin*, 170 U.S.P.Q. 209, 212 (C.C.P.A. 1971). In particular, the Examiner's statement that "the version management table that existed in boot managers disclosed by Stevelim must also exist in some form in the non-volatile memory once one... incorporate [sic] Lovelace's teachings with Stevelim," see Office Action from 08/23/2005, p. 22, emphasis added, is a generalized, unsupported, subjective assertion that does not fulfill the Examiner's burden of providing an objective suggestion or motivation to combine the references. No support for this statement is found in the prior art. Consequently, the Examiner's motivation to combine *Stevelim* with *Lovelace* is insufficient to support a *prima facie* case of obviousness for rejecting claim 31. M.P.E.P. §2145.

Regarding the rejection to claim 34, the Examiner also uses the ostensible motivation to combine *Stevelim* and *Lovelace* that:

It would have been obvious ... to further incorporate the limitations recited in claim 34 to Stevelim and Lovelace's combination method if said first result is false as this would mean that the boot components of the first BP is [sic] corrupted. One ... would obviously not boot to a BP whose boot components have been determined to be corrupted. One ... would obviously compare the data in the version management table to the second BP with data pointed to by the second BP in the MBR to return a second compare result as one ... would also want to verify if the second BP's boot components are also corrupted. If the second/alternate BP's boot components are not corrupted as indicated by a true being returned as a result of the second compare, then it would be obvious for one ... to boot the alternate BP to attempt repairs to the boot components of the first BP. ... One ... would be motivated to incorporate the limitations as recited in claim 34 into Stevelim and Lovelace's combination method because it would allow one ... to find a way to

repair the corrupted boot components as discussed above if the alternate BP's boot components aren't corrupted also. *See* Office Action from 08/23/2005, p. 23.

Appellants respectfully traverse. The Examiner has not presented a source for his motivation for modifying *Stevelim* with *Lovelace*, other than the Examiner's unsupported subjective opinion, which is not objective evidence. The Examiner has not provided any evidence that his motivation comes from any permissible source as defined by the case law. The Examiner's statements (shown emphasized) presuppose elements gleaned from Appellant's disclosure to reach a conclusion of obviousness. In this case, a second compare operation and a second compare result are inventive elements which originated in Appellant's disclosure, and are not mentioned in the cited prior art. The Examiner's assumption that a first compare result of false "would mean that the boot components of the first BP is [sic] corrupted," *see* Office Action from 08/23/2005, p. 23, is not supported by Appellant's disclosure or the cited prior art. The Examiner has not shown, using objective evidence, why one of ordinary skill in the art at the time of the invention "would obviously compare the data in the version management table to the second BP with data pointed to by the second BP in the MBR to return a second compare result." *See* Office Action from 08/23/2005, p. 23. The Examiner's explanation, "as one ... would also want to verify if the second BP's boot components are also corrupted," is not supported by Appellant's disclosure or the cited prior art. For example, the Examiner has not shown why the method steps in claim 34 are pertinent or necessary if boot component are corrupted by viruses, as opposed to the use of a commercially available program (Norton, Symantec, etc.) for remediation of a corrupted system. Once again, the Examiner's questionable logic provides clear evidence of impermissible hindsight. Any judgment on obviousness must not include knowledge gleaned from Appellants' disclosure. *In re McLaughlin*, 170 U.S.P.Q. 209, 212 (C.C.P.A. 1971). Since the Examiner does not recite *Stevelim* or *Lovelace* as teaching or suggesting the limitations in claim 34, the Examiner is relying not only on a combination, but a modification of the combination of the references in construing the obviousness rejection. By stating that, "One ... would be motivated to incorporate the limitations as recited in claim 34 into *Stevelim* and *Lovelace*'s combination method because it would allow one ... to find a way to repair the corrupted boot components as discussed above if the alternate BP's boot components aren't corrupted also," *see* Office Action from 08/23/2005, p. 23, the Examiner appears to impermissibly use the claim limitations as a guide for retroactively construing obviousness from a modification of the combination, without any objective evidence or prior art which supports

either the combination or the modification of the combination to arrive at Appellant's invention. Consequently, the Examiner's motivation to combine *Stevelim* with *Lovelace* is insufficient to support a *prima facie* case of obviousness for rejecting claim 34. M.P.E.P. §2145.

Regarding the rejection to claim 35, the Examiner also uses the ostensible motivation to combine *Stevelim* and *Lovelace* that:

Stevelim and Lovelace to not explicitly disclose stopping booting of said computer system if said second compare result is false. However, it would have been obvious ... to do so as if [sic] both the first and second compare result is [sic] false, then that means that the boot components of both the first and second BP are corrupted. One ... would be motivated to stop the boot process as this would prevent further corruption to the computer system. *See* Office Action from 08/23/2005, p. 23.

Appellants respectfully traverse. The Examiner has not presented a source for his motivation for modifying *Stevelim* with *Lovelace*, other than the Examiner's unsupported subjective opinion, which is not objective evidence. The Examiner has not provided any evidence that his motivation comes from any permissible source as defined by the case law. The hypothetical assumption regarding the first and second compare result, "then that means that the boot components of both the first and second BP are corrupted," *see* Office Action from 08/23/2005, p. 23, is also the Examiner's own unsupported, subjective opinion, and not an objectively established fact. The Examiner ignores a multitude of other factors and situations that may lead to first and second compare being false, for example, that a licensing period for a given BP may have expired. The Examiner's arguments again presuppose elements gleaned from Appellant's disclosure to reach a conclusion of obviousness. In this case, a first and second compare operation along with a first and second compare result are inventive elements which originated in Appellant's disclosure, and are not mentioned in the cited prior art. Once again, the Examiner's logic provides clear evidence of impermissible hindsight. Any judgment on obviousness must not include knowledge gleaned from Appellants' disclosure. *In re McLaughlin*, 170 U.S.P.Q. 209, 212 (C.C.P.A. 1971). Consequently, the Examiner's motivation to combine *Stevelim* with *Lovelace* is insufficient to support a *prima facie* case of obviousness for rejecting claim 35. M.P.E.P. §2145.

Regarding claims 9 and 29, the Examiner has not presented a source for his motivation for modifying *Stevelim* with *Lovelace* for at least the reasons presented above for claims 8 and 28. Regarding claim 39, the Examiner has not presented a source for his motivation for modifying *Stevelim* with *Lovelace* for at least the reasons presented above for claim 7.

Regarding claim 40, the Examiner has not presented a source for his motivation for modifying *Stevelim* with *Lovelace* for at least the reasons presented above for claim 8. Regarding claim 41, the Examiner has not presented a source for his motivation for modifying *Stevelim* with *Lovelace* for at least the reasons presented above for claim 9.

It is improper, in determining whether a person of ordinary skill would have been led to this combination of references, to use the inventor's teaching against him. *W.L. Gore v. Garlock, Inc.*, 721 F.2d 1540, 1553, 220 USPQ 303, 312-313 (CA FC 1983). Prior art references in combination do not make an invention obvious unless something in the prior art references would suggest the advantage to be derived from combining their teachings. *In re Sernaker*, 702 F.2d 989, 217 USPQ 1, 6 (CA FC 1983). As a result of the foregoing, Appellants respectfully assert that the Examiner has not presented a *prima facie* case of obviousness for rejecting claims 1, 7-9, 21, 27-29, 31, 34-35, and 39-41. M.P.E.P. §2143.

A.2. The following claim limitations are not taught, either singly or in combination, by *Stevelim* in view of *Lovelace*.

Regarding claims 1 and 21, *Lovelace* does not teach or suggest "loading said first and second versions of said bootable program into first and second partitions of a storage device coupled to said computer system." *Stevelim* and *Lovelace*, either singly or in combination, do not teach or suggest "hashing a boot record (BR) of said first and second versions of said bootable program producing respective first and second digests; signing said first and second digests using a cryptographic signature engine and a private installation key producing first and second signatures; storing said first and second signatures with additional data defining said first and second versions of said bootable program in first and second entries in a non-volatile memory coupled to said computer system," as in claims 1 and 21. *Stevelim* does not teach or suggest "assigning said first entry corresponding to said first version of said bootable program as an active entry in said non-volatile memory." *Stevelim* and *Lovelace*, taken either singly or in combination, do not teach or suggest "assigning said second entry corresponding to said second version of said bootable program as an alternate entry in said non-volatile memory." Instead, *Lovelace* teaches a method that is operable for one single operating system. *Lovelace*, col. 2, lines 5-8; col. 2, lines 51-52; Fig. 3, element 350; Claim 1. *Lovelace* does not teach or suggest loading or booting more than one, i.e., a first and second, version of a bootable program on a single computer system. The method of *Lovelace* is not operable using a first and second version

of a bootable program, as in claims 1 and 21, in combination with *Stevelim*, because none of the references teach or suggest the circuitry or a method for steps necessary to determine which version to boot using authentication, or an equivalent element therefor. The Examiner has not provided a reference that teaches or suggests such logical decision making method steps, as in claims 1 and 21. Instead, the Examiner assumes, without justification or objective evidence, that these method steps must necessarily result from the combination. *See* Office Action from 08/23/2005, p. 17. Thus, contrary to the Examiner's assertion, the combination of *Stevelim* and *Lovelace* would be inoperable and unable to provide authenticated boot management among multiple boot programs. If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984), M.P.E.P. §2143.01. Thus the Examiner has not established a *prima facie* case of obviousness in rejecting claims 1 and 21.

Regarding claims 3 and 23, these claims depend from claims 1 and 21, respectively. For at least the aforementioned reasons presented in support of claims 1 and 21, the Examiner has not established a *prima facie* case of obviousness in rejecting claims 3 and 23.

Regarding claims 7 and 27, the Examiner cites *Stevelim* as disclosing "known boot managers that can handle more than just one OS," and *Lovelace* as disclosing "a way to monitor boot components to make sure they are not corrupted." *See* Office Action 08/23/2005, p. 18. Yet the Examiner has not addressed the claim language in claims 7 and 27. The Examiner states that:

One of ordinary skill would be motivated on the indication that an entry/OS boot component is corrupted to monitor other OS's boot components to see if there are any chance [sic] one of the other OS's boot components aren't corrupted and one of the other OS's could be booted to from which repairs could be effected. *See* Office Action from 08/23/2005, p. 18.

Appellants respectfully traverse and assert that neither *Stevelim* nor *Lovelace*, taken singly or in combination, teach or suggest monitoring a third entry in non-volatile memory for an indication said third entry is valid, as in claims 7 and 27. There is no language in the references that teaches or suggests a third entry, or that this third entry in non-volatile memory is monitored to determine if it is valid, i.e. there is a value stored in the entry. Appellants note that in *Lovelace* the boot components are collectively associated with a single boot program. *Lovelace*, col. 2, lines 5-8; col. 2, lines 51-52; Fig. 3, element 350; Claim 1. There is no language in *Lovelace* that

teaches or suggests more than one boot program. In *Stevelim*, there is no mention of storing entries in a non-volatile memory. The Examiner has also repeatedly interpreted the existence of a third OS, where none is cited in the prior art or in Appellants disclosure. See Office Action 08/23/2005, pp. 18-19. The Examiner is relying upon an incorrect, factual predicate in support of the rejection. In *re Rouffet*, 47 U.S.P.Q.2d 1453, 1455 (CA FC 1998). The Examiner's statement that: "It would have been obvious ... to monitor a third entry of said non-volatile memory for an indication said third entry is valid as it would allow for a way to replace one of the previous two OS entries with the third entry," see Office Action from 08/23/2005, p. 19, emphasis added, does not justify the rejection based on the teachings of the prior art and is clear evidence that the Examiner is using elements of Appellant's invention, to improperly construe the obviousness rejection. Therefore the Examiner has not presented a *prima facie* case of obviousness in rejecting claims 7 and 27.

Regarding claims 8 and 28, the Examiner admits that *Stevelim* and *Lovelace* do not teach the limitations of these claims. Despite this, the Examiner asserts obviousness based on allowing "for a way to replace one of the previous two OS entries with the third entry for boot managers than only handles [sic] two OS's." See Office Action 04/05/2005, p.8. Appellants respectfully traverse. Neither *Stevelim* nor *Lovelace*, taken singly or in combination, teach or suggest moving contents of said second entry to said first entry in response to said valid indication (in dependency to claims 7 and 27, respectively), as in claims 8 and 28. The Examiner has not addressed the claim language and has not fulfilled his burden of providing objective evidence in support of the rejection. The Examiner's unsupported subjective opinion is not objective evidence. Therefore the Examiner has not established a *prima facie* case of obviousness in rejecting claims 8 and 28.

Regarding claims 9 and 29, the Examiner admits that *Stevelim* and *Lovelace* do not teach the limitations of these claims. Despite this, the Examiner asserts obviousness "because *Stevelim* discloses boot managers capable of handling more than just one OS's, it would have been obvious to one... to have a boot manager which handles just two OS's." See Office Action 04/05/2005, p.19. Appellants respectfully traverse. Neither *Stevelim* nor *Lovelace*, taken singly or in combination, teach or suggest "moving contents of said third entry to said second entry; marking said second partition...as said active partition...; and booting said version of said bootable program in said active partition," as in claims 9 and 29. The Examiner has not

addressed the claim language and has not fulfilled his burden of providing objective evidence in support of the rejection. The Examiner's unsupported subjective opinion is not objective evidence. For at least the aforementioned reasons, and for at least the reasons present in support of claims 8 and 28, the Examiner has not established a *prima facie* case of obviousness in rejecting claims 9 and 29.

Regarding claim 31, the Examiner admits that *Stevelim* does not disclose "maintaining a version management table in a non-volatile memory wherein data placed in an active entry indicates which version of said BP corresponds to an active version and wherein data placed in an alternate entry indicates which version of said BP corresponds to an alternate version; comparing selected data in said active entry in said version management table to selected data pointed to by said active partition entry of said MBR returning a first compare result; and booting with said version in said active partition if said first compare result is true," as in claim 31. Instead of construing a *prima facie* case of obviousness against claim 31, the Examiner states that: "...a version management table of some sort must exist in the boot managers disclosed by Stevelim or there would be no way for the boot managers to keep track of which BP is the active version and which should be designated as alternates." *See* Office Action from 08/23/2005, p. 21. Appellants respectfully traverse. The Examiner's assumption that the claim limitation must exist is his own unsupported, subjective opinion and not objective evidence. The Examiner's further statement that: "If it did not exist in the non-volatile memory, then the system would have no way of determining which boot component is corrupted for which OS," *See* Office Action from 08/23/2005, p. 22, is another unsupported, subjective opinion and not objective evidence in support of obviousness; this statement rather provides support for Appellant's assertion of allowability of claim 31, since the Examiner states that no method is known for the disclosed functionality except as found in the claim limitation itself. The Examiner's assumption that the claim limitation must exist in the prior art, despite the fact that no prior art is cited disclosing the claimed subject matter, is strong evidence of impermissibly using knowledge gleaned from Appellants' disclosure in construing the rejection. It is improper, in determining whether a person of ordinary skill would have been led to this combination of references, to use the inventor's teaching against him. *W.L. Gore v. Garlock, Inc.*, 721 F.2d 1540, 1553, 220 USPQ 303, 312-313 (CA FC 1983). Thus, the Examiner has not established a *prima facie* case of obviousness in rejecting claim 31.

Regarding claim 34, the Examiner admits that *Stevelim* does not disclose " replacing said data in said active entry with said data in said alternate entry if said first result is false; comparing selected data in said active entry in said version management table to selected data pointed to by said active partition entry of said MBR returning a second compare result; and booting with said alternate version in said active partition if said second compare result is true," as in claim 34. The Examiner also does not cite *Lovelace* as disclosing the claim language. Instead of construing a *prima facie* case of obviousness against claim 34, the Examiner states that: "One of ordinary skill would obviously compare the data in the version management table corresponding to the second BP with data pointed to by the second BP in the MBR to return a second compare result...." *See* Office Action from 08/23/2005, p. 23. Appellants respectfully traverse. The Examiner has not addressed the claim language and has not fulfilled his burden of providing objective evidence in support of the rejection. The Examiner's unsupported subjective opinion is not objective evidence. The Examiner has cited no prior art that teaches or suggests the limitations of claim 34, other than Appellant's disclosure. It is improper, in determining whether a person of ordinary skill would have been led to this combination of references, to use the inventor's teaching against him. *W.L. Gore v. Garlock, Inc.*, 721 F.2d 1540, 1553, 220 USPQ 303, 312-313 (CA FC 1983). Thus, the Examiner has not established a *prima facie* case of obviousness in rejecting claim 34.

Regarding claim 35, the Examiner admits that *Stevelim* and *Lovelace* do not teach the limitations of this claim. Despite this, the Examiner asserts obviousness "as if both the first and second compare result is false, then that means that the boot components of both the first and second BP are corrupted. One...would be motivated to stop the boot process...." *See* Office Action 04/05/2005, p.23-24. Appellants respectfully traverse. Neither *Stevelim* nor *Lovelace*, taken singly or in combination, teach or suggest "stopping booting of said computer system if said second compare result is false" as in claim 35. Neither *Stevelim* nor *Lovelace* teach or suggest a second compare result. The Examiner has not addressed the claim language and has not fulfilled his burden of providing objective evidence in support of the rejection. The Examiner's unsupported subjective opinion is not objective evidence. Thus, the Examiner has not established a *prima facie* case of obviousness in rejecting claim 35.

The Examiner cites *Stevelim* (p1, bullet 1) as disclosing the limitation in claim 36. Appellants respectfully traverse. *Stevelim* does not teach a method wherein said active partition

pointed to by said active partition entry in said MBR is changed in response to a version management program command sequence. *Stevelim* discloses a boot manager that allows the user to manually select the boot program and boot partition using LILO in a preconfigured scenario. *Stevelim* teaches that the configuration or any change thereof in the designated boot partitions and boot programs is an offline function that must be performed separately before LILO is used. Therefore the Examiner has not presented a *prima facie* case of obviousness in rejecting claim 36, since the Examiner is relying upon an incorrect, factual predicate in support of the rejection. *In re Rouffet*, 47 U.S.P.Q.2d 1453, 1455 (CA FC 1998).

Appellants acknowledge the Examiner's statement that the limitations recited by claim 7 and claim 39 are substantially similar. Claim 39 is therefore allowable for at least the reasons and arguments presented in this paper in support of claim 7. Appellants respectfully assert that the Examiner has not presented a *prima facie* case of obviousness in rejecting claim 39.

Appellants acknowledge the Examiner's statement that the limitations recited by claim 8 and claim 40 are substantially similar. Claim 40 is therefore allowable for at least the reasons and arguments presented in this paper in support of claim 8. Appellants respectfully assert that the Examiner has not presented a *prima facie* case of obviousness in rejecting claim 40.

Appellants acknowledge the Examiner's statement that the limitations recited by claim 9 and claim 41 are substantially similar. Claim 41 is therefore allowable for at least the reasons and arguments presented in this paper in support of claim 9. Appellants respectfully assert that the Examiner has not presented a *prima facie* case of obviousness in rejecting claim 41.

B. Claims 11, 13, 17-19, 43, 46-48, and 51-53 are not properly rejected under 35 U.S.C. §103(a) as being unpatentable over *Stevelim* in view of *Lovelace* and further in view of *Rickey*.

Claims 11, 13, 17-19, 43, 46-48, and 51-53 are rejected under 35 U.S.C. §103(a) as being unpatentable over *Stevelim* in view of *Lovelace* and further in view of *Rickey*. See Office Action from 08/23/2005, p. 25.

B.1. The Examiner has provided neither sufficient motivation nor a source of motivation for combining *Stevelim* with *Lovelace* and *Rickey*.

The Examiner recites the following motivation for modifying *Stevelim* with *Lovelace* and *Rickey* in construing the rejection to claim 11:

In light of the teachings of *Lovelace* and *Rickey*, it would have been obvious ... to utilize the method recited in claim 1 in the typical computer system according to the limitations recited in claim 11. One ... would have done so as *Lovelace* and *Rickey* both showed that a computer system with such components are needed to implement a system which allows for the detection of corrupted boot components. Incorporating *Lovelace* and *Rickey*'s teachings into *Stevelim*'s teachings would allow for a multiple OS boot manager capable of detecting corrupted boot components. Note that because *Stevelim*'s boot manager handles multiple OS's, that when the boot record of each OS gets hashed and stored in memory, one of the things that must get hashed is the status of the OS—i.e. is the OS set active or as an alternate. See Office Action from 08/23/2005, p. 27, emphasis added.

Appellants respectfully traverse. The Examiner has not presented a source for his motivation for modifying *Stevelim* with *Lovelace* and *Rickey*, other than the Examiner's unsupported subjective opinion, which is not objective evidence. The motivation to modify *Stevelim* with *Lovelace* and *Rickey* must come from one of three possible sources: the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons of ordinary skill in the art. *In re Rouffet*, 149 F.3d 1350, 1357, 47 U.S.P.Q.2d 1453, 1457-58 (Fed. Cir. 1998). The Examiner has not provided any evidence that his motivation comes from any of these sources. Instead, the Examiner is relying upon his own subjective opinion which is insufficient to support a *prima facie* case of obviousness. *In re Lee*, 61 U.S.P.Q.2d 1430, 1434 (Fed. Cir. 2002). The Examiner's statement that: "One ... would have done so as *Lovelace* and *Rickey* both showed that a computer system with such components are needed to implement a system which allows for the detection of corrupted boot components," see Office Action from 08/23/2005, p. 27, is not accurate. There is no mention in *Lovelace* or *Rickey* of a computer system comprising:

circuitry for loading said first and second versions of said bootable program into first and second partitions of a storage device coupled to said computer system;

circuitry for hashing a boot record (BR) of said first and second versions of said bootable program producing respective first and second digests;

circuitry for signing said first and second digests using a cryptographic signature engine and a private installation key producing first and second signatures;

circuitry for storing said first and second signatures with additional data defining said first and second versions of said bootable program in first and second entries in a non-volatile memory coupled to said computer system;

circuitry for assigning said first partition as an active partition of said storage device by updating an active partition entry of a partition table of a master boot record (MBR) of said storage device, said active partition entry indicating which version of said BP is booted on a power up of said computer system;

circuitry for assigning said first entry corresponding to said first version of said bootable program as an active entry in said non-volatile memory; and

circuitry for assigning said second entry corresponding to said second version of said bootable program as an alternate entry in said non-volatile memory,

as in claim 11. There is no mention in *Lovelace* or *Rickey* that the elements of claim 11 are

required for implementing a system for detecting corrupted boot components. The Examiner appears to impermissibly use the claim limitations as a guide for retroactively construing obviousness from a modification of the combination, without any objective evidence or prior art which supports either the combination or the modification of the combination. The Examiner is using the resulting functionality of the elements in claim 11 as justification for the obviousness rejection, by implicitly modifying an unsupported combination of *Stevelim*, *Lovelace*, and *Rickey* to arrive at Appellant's invention. The Examiner's questionable logic is clear evidence of impermissible hindsight in construing the rejection to claim 11 based on an unsupported combination of *Stevelim* and *Lovelace*. Impermissible hindsight must be avoided and the legal conclusion [of obviousness] must be reached on the basis of the facts gleaned from the prior art. M.P.E.P. §2142.

Furthermore, the combination of *Stevelim* and *Lovelace* and *Rickey* cited by the Examiner would require substantial redesign and modification of the references to arrive at the claimed invention. *Stevelim* would require substantial modification and redesign, at least because *Stevelim* does not teach or suggest circuitry for authentication of boot components, circuitry for storage in non-volatile memory, and circuitry for determining which BP to boot in response to authentication results. *Lovelace* would require substantial modification and redesign, at least because *Lovelace* does not teach or suggest circuitry for securing boot components for multiple loaded versions of a boot program, and circuitry for determining which BP to boot in response to authentication results. *Rickey* would require substantial modification and redesign, at least because *Rickey* does not teach or suggest circuitry for securing boot components for multiple loaded versions of a boot program, circuitry for authentication of boot components, and circuitry for determining which BP to boot in response to authentication results. Such substantial modifications required of *Stevelim*, *Lovelace* and *Rickey* to arrive at Appellant's invention would require a change in the principle of operation of each of these references. If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959), M.P.E.P. §2143.02.

Further, the source of the Examiner's motivation to combine the cited prior art to arrive at the limitations in claim 11 appears to be gleaned directly from Appellant's disclosure. Absent

knowledge of Appellant's invention, there is simply no suggestion or motivation for one of ordinary skill in the art, faced with *Stevelim*, to seek out *Lovelace* and *Rickey* in order "to implement a system which allows for the detection of corrupted boot components." See Office Action from 08/23/2005, p. 27. The Examiner may not use the application as a basis for the motivation to combine or modify the prior art to arrive at the claimed invention. *ACS Hosp. Sys., Inc. v. Montefiore Hosp.*, 732F.2d 1572, 221 USPQ 929 (Fed. Cir. 1984). The Examiner's statement that "when the boot record of each OS gets hashed and stored in memory, one of the things that must get hashed is the status of the OS," see Office Action from 08/23/2005, p. 27, purports that "circuitry for hashing a boot record of said first and second versions of said bootable program producing respective first and second digests; circuitry for signing first and second digests using a cryptographic signature engine and a private installation key produced first and second signatures; circuitry for storing said first and second signatures...in a non-volatile memory...", as recited in claim 11, is an obvious system for detecting corrupted boot components to one of ordinary skill in the art. However, no support for the Examiner's statement is provided in the prior art. Instead, the Examiner's statement is evidence of the impermissible reasoning applied by the Examiner, namely with full knowledge of Appellant's invention, in construing the obviousness rejection. As a result of the foregoing, the Examiner's motivation to combine *Stevelim* with *Lovelace* and *Rickey* is insufficient to support a *prima facie* case of obviousness for rejecting claim 11.

Regarding the rejection to claim 43, the Examiner also uses the motivation to combine *Stevelim* with *Lovelace* and *Rickey* that:

In light of the teachings of *Lovelace* and *Rickey*, it would have been obvious ... to utilize the method recited in claim 31 in the typical computer system according to the limitations recited in claim 43. One ... would have done so as *Lovelace* and *Rickey* both showed that a computer system with such components are needed to implement a system which allows for the detection of corrupted boot components. Incorporating *Lovelace* and *Rickey*'s teachings into *Stevelim*'s teachings would allow for a multiple OS boot manager capable of detecting corrupted boot components. See Office Action from 08/23/2005, p. 29-30.

Appellants respectfully traverse. The Examiner's statement that: "One ... would have done so as *Lovelace* and *Rickey* both showed that a computer system with such components are needed to implement a system which allows for the detection of corrupted boot components," see Office Action from 08/23/2005, p. 29, is not accurate. There is no mention in *Lovelace* or *Rickey* of a computer system comprising:

circuitry for loading said first and second versions of said bootable program into first and second partitions of a storage device coupled to said computer system;

circuitry for identifying said first version as an active partition in a master boot record (MBR) by placing data defining said first version in an active partition entry, said active partition entry indicating which version of said BP is booted on a power up of said computer system;

circuitry for maintaining a version management table in a non-volatile memory wherein data placed in an active entry indicates which version of said BP corresponds to an active version and wherein data placed in an alternate entry indicates which version of said BP corresponds to an alternate version;

circuitry for comparing selected data in said active entry in said version management table to selected data pointed to by said active partition entry of said MBR returning a first compare result; and

circuitry for booting with said version in said active partition if said first compare result is true,

as in claim 43. There is no mention in *Lovelace* or *Rickey* that the elements of claim 43 are required for implementing a system for detecting corrupted boot components. The Examiner has not presented a source for his motivation for modifying *Stevelim* with *Lovelace* and *Rickey*, other than the Examiner's unsupported subjective opinion, which is not objective evidence. The Examiner has not provided any evidence that his motivation comes from any permissible source as defined by the case law. Instead, the Examiner is relying upon his own subjective opinion which is insufficient to support a *prima facie* case of obviousness. *In re Lee*, 61 U.S.P.Q.2d 1430, 1434 (Fed. Cir. 2002). The Examiner is using the resulting functionality of the elements in claim 43 as justification for the obviousness rejection, by implicitly modifying an unsupported combination of *Stevelim*, *Lovelace*, and *Rickey* to arrive at Appellant's invention. The Examiner's questionable logic is clear evidence of impermissible hindsight in construing the rejection to claim 43 based on an unsupported combination of *Stevelim* and *Lovelace*. The Examiner appears to impermissibly use the claim limitations as a guide for retroactively construing obviousness from a modification of the combination, without any objective evidence or prior art which supports either the combination or the modification of the combination. Impermissible hindsight must be avoided and the legal conclusion [of obviousness] must be reached on the basis of the facts gleaned from the prior art. M.P.E.P. §2142. As stated above in

support of claim 11, the combination of *Stevelim* and *Lovelace* and *Rickey* cited by the Examiner would require substantial redesign and modification of the references to arrive at the claimed invention. For example, *Lovelace* and *Rickey* do not teach or suggest a method that is operable when more than one boot program is installed. If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959), M.P.E.P. §2143.02. The source of the Examiner's motivation to combine the cited prior art to arrive at the limitations in claim 43 appears to be gleaned directly from Appellant's disclosure. Absent knowledge of Appellant's invention, there is simply no suggestion or motivation for one of ordinary skill in the art, faced with *Stevelim*, to seek out *Lovelace* and *Rickey* in order "to implement a system which allows for the detection of corrupted boot components." See Office Action from 08/23/2005, p. 30. The Examiner may not use the application as a basis for the motivation to combine or modify the prior art to arrive at the claimed invention. *ACS Hosp. Sys., Inc. v. Montefiore Hosp.*, 732F.2d 1572, 221 USPQ 929 (Fed. Cir. 1984). As a result of the foregoing, the Examiner's motivation to combine *Stevelim* with *Lovelace* and *Rickey* is insufficient to support a *prima facie* case of obviousness for rejecting claim 43.

B.2. The following claim limitations are not taught, either singly or in combination, by *Stevelim* in view of *Lovelace* and *Rickey*.

Regarding claim 11, *Lovelace* does not teach or suggest "circuitry for loading said first and second versions of said bootable program into first and second partitions of a storage device coupled to said computer system." *Stevelim* and *Lovelace* and *Rickey*, either singly or in combination, do not teach or suggest "circuitry for hashing a boot record (BR) of said first and second versions of said bootable program producing respective first and second digests; circuitry for signing said first and second digests using a cryptographic signature engine and a private installation key producing first and second signatures; circuitry for storing said first and second signatures with additional data defining said first and second versions of said bootable program in first and second entries in a non-volatile memory coupled to said computer system," as in claim 11. *Stevelim* does not teach or suggest "circuitry for assigning said first entry corresponding to said first version of said bootable program as an active entry in said non-

volatile memory." *Stevelim* and *Lovelace*, taken either singly or in combination, do not teach or suggest "circuitry for assigning said second entry corresponding to said second version of said bootable program as an alternate entry in said non-volatile memory." Instead, *Lovelace* teaches a method that is operable on a computer system for one single operating system. *Lovelace*, col. 2, lines 5-8; col. 2, lines 51-52; Fig. 3, element 350; Claim 1. *Lovelace* does not teach or suggest loading or booting more than one, i.e., a first and second, version of a bootable program on a single computer system. The method of *Lovelace* is not operable on a computer system having circuitry for loading a first and second version of a bootable program, as in claim 11, in combination with *Stevelim*, because none of the references teach or suggest the circuitry or a method for steps necessary to determine which version to boot using authentication, or an equivalent element therefor. The Examiner has not provided a reference that teaches or suggests such circuitry for logical decision making method steps, as in claim 11. Instead, the Examiner assumes, without justification or objective evidence, that this circuitry must necessarily result from the combination. See Office Action from 08/23/2005, p. 27. Thus, contrary to the Examiner's assertion, the combination of *Stevelim* and *Lovelace* and *Rickey* would be inoperable and unable to provide a system capable of authenticated boot management among multiple boot programs. If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984), M.P.E.P. §2143.01. Thus the Examiner has not established a *prima facie* case of obviousness in rejecting claim 11.

Claim 13 depends from claim 11 with the additional limitation of a boot program that is an operating system. Therefore, the Examiner has not presented a *prima facie* case of obviousness in rejecting claim 13 for at least the reasons presented above in support of claim 11.

Appellants acknowledge the Examiner's statements that the limitations recited by claims 7, 8, and 9 and claims 17, 18, and 19, respectively, are substantially similar, except that claims 17, 18, and 19 refer to circuitry which performs the methods of claims 7, 8, and 9, respectively. See Office Action from 08/23/2005, p. 27-28. Claims 17, 18, and 19 are therefore allowable for at least the reasons and arguments presented in this paper in support of claims 7, 8, and 9, respectively. Appellants respectfully assert that the Examiner has failed to present a *prima facie* case of obviousness in rejecting claims 17, 18, and 19.

Regarding claim 43, the Examiner does not cite *Stevelim*, *Lovelace*, or *Rickey* teaching or suggesting "circuitry for maintaining a version management table in a non-volatile memory wherein data placed in an active entry indicates which version of said BP corresponds to an active version and wherein data placed in an alternate entry indicates which version of said BP corresponds to an alternate version; circuitry for comparing selected data in said active entry in said version management table to selected data pointed to by said active partition entry of said MBR returning a first compare result; and circuitry for booting with said version in said active partition if said first compare result is true," as in claim 43. Instead of construing a *prima facie* case of obviousness against claim 43, the Examiner states that: "...Lovelace and Rickey both showed that a computer system with such components are needed to implement a system which allows for the detection of corrupted boot components. Incorporating Lovelace and Rickey's teachings into Stevelim's teachings would allow for a multiple OS boot manager capable of detecting corrupted boot components." See Office Action from 08/23/2005, pp. 29-30. Appellants respectfully traverse. Contrary to the Examiner's statement, *Rickey* in fact teaches away from the Examiner's assertion: "The present boot sector virus protection method does not involve active virus detection.... Instead, the ...method moves the functionality of the boot sector program into the BIOS so that the boot sector program would not need to be executed." *Rickey*, ¶[0025]. The method of *Lovelace* is not operable on a computer system having circuitry for loading a first and second version of a bootable program, as in claim 43, in combination with *Stevelim*, because none of the references teach or suggest the circuitry or a method for steps necessary to determine which version to boot using authentication, or an equivalent element therefor. The Examiner has not provided a reference that teaches or suggests such circuitry for logical decision making method steps, as in claim 43. The Examiner's assumption that the claim limitation exist in the prior art, despite the fact that no prior art is cited disclosing the subject matter, is strong evidence of impermissibly using knowledge gleaned from Appellants' disclosure in construing the rejection. It is improper, in determining whether a person of ordinary skill would have been led to this combination of references, to use the inventor's teaching against him. *W.L. Gore v. Garlock, Inc.*, 721 F.2d 1540, 1553, 220 USPQ 303, 312-313 (CA FC 1983). Thus, the Examiner has not established a *prima facie* case of obviousness in rejecting claim 43.

Appellants acknowledge the Examiner's statement that the limitations recited by claims 34, 35, 36, 39, 40 and 41 and claims 46, 47, 48, 51, 52, and 53, respectively, are substantially similar, except that claims 46, 47, 48, 51, 52, and 53 refer to circuitry which performs the methods of claims 34, 35, 36, 39, 40 and 41, respectively. Claims 46, 47, 48, 51, 52, and 53 are therefore allowable for at least the reasons and arguments presented in this paper in support of claims 34, 35, 36, 39, 40 and 41, respectively. Appellants respectfully assert that the Examiner has failed to present a *prima facie* case of obviousness in rejecting claims 46, 47, 48, 51, 52, and 53.

C. Claims 2, 10, 22, 30, 32-33, and 42 are not properly rejected under 35 U.S.C. §103(a) as being unpatentable over *Stevelim* in view of *Lovelace* and further in view of Appellants' admittance of prior art.

Claims 2, 10, 22, 30, 32-33, and 42 are rejected under 35 U.S.C. §103(a) as being unpatentable over *Stevelim* in view of *Lovelace* and further in view of Appellants' admittance of prior art.

C.1. The Examiner has not provided a source of motivation for combining *Stevelim* with *Lovelace*, nor for modifying this combination.

A *prima facie* showing of obviousness requires the Examiner to establish, *inter alia*, that the prior art references teach or suggest, either alone or in combination, all of the limitations of the claimed invention, and the Examiner must provide a motivation or suggestion to combine or modify the prior art reference to make the claimed inventions. M.P.E.P. §2142. The showings must be clear and particular and supported by objective evidence. *In re Lee*, 277 F.3d 1338, 1343, 61 U.S.P.Q.2d 1430, 1433-34 (Fed. Cir. 2002); *In re Kotzab*, 217 F.3d 1365, 1370, 55 U.S.P.Q.2d 1313, 1317 (Fed. Cir. 2000); *In re Dembiczak*, 50 U.S.P.Q.2d 1614, 1617 (Fed. Cir. 1999). Broad conclusory statements regarding the teaching of multiple references, standing alone, are not evidence. *Id.* In order to establish a *prima facie* case of obviousness, it is necessary for the Examiner to present objective evidence, preferably in the form of some teaching, suggestion, incentive or inference in the applied prior art. *Ex parte Levengood*, 28 U.S.P.Q.2d 1300, 1301 (BPAI 1993); *Ashland Oil, Inc. v. Delta Resins and Refractories, Inc.*, 776 F.2d 281, 227 U.S.P.Q. 657 (CA FC 1985).

The Examiner does not recite a source of motivation for combining *Stevelim* with *Lovelace* in construing the rejection to claims 2, 10, 22, 30, 32-33, and 42. The Examiner is apparently assuming that the combination of *Stevelim* and *Lovelace* is an established fact. Appellants respectfully traverse. The Examiner has not presented a source for his motivation for modifying *Stevelim* with *Lovelace*, for at least the reasons presented previously in this paper. The Examiner's unsupported subjective opinion is not a sufficient substitute for objective evidence. Therefore, the Examiner has failed to establish a *prima facie* case of obviousness in rejecting claims 2, 10, 22, 30, 32-33, and 42.

Regarding claims 2 and 22, the Examiner recites that: "It would have been obvious...to further modify Stevelim and Lovelace's combination method and system according to the limitations recited in claims 2 and 22 as it would prevent changing the contents of said first and second entries either by accident or by a virus after POST is finished and an OS is loaded." *See* Office Action from 08/23/2005, pp. 31-32, emphasis added. Appellants respectfully traverse. The Examiner has cited no source for the motivation to modify the combination of *Stevelim* and *Lovelace*. The Examiner's unsupported subjective opinion is not a sufficient substitute for objective evidence. Thus, the Examiner has not established a *prima facie* case of obviousness in rejecting claims 2 and 22.

Regarding claim 32, the Examiner recites that: "It would have been obvious...to further modify Stevelim and Lovelace's combination method and system according to the limitations recited in claim 32 as it would prevent the active and alternate entries in the version management table from being changed accidentally or by a virus when the system has no reason to write them." *See* Office Action from 08/23/2005, p. 32, emphasis added. Appellants respectfully traverse. The Examiner has cited no source for the motivation to modify the unsupported combination of *Stevelim* and *Lovelace*. The Examiner's unsupported subjective opinion is not a sufficient substitute for objective evidence. Thus, the Examiner has not established a *prima facie* case of obviousness in rejecting claim 32.

Regarding claim 42, the Examiner recites that: "It would have been obvious...to further modify Stevelim and Lovelace's combination method and system according to the limitations recited in claim 42. One...would have been motivated to do so as it would prevent accidental modification or modification by a virus of the memory content." *See* Office Action from

08/23/2005, p. 33, emphasis added. Appellants respectfully traverse. The Examiner has cited no source for the motivation to modify the unsupported combination of *Stevelim* and *Lovelace*. The Examiner's unsupported subjective opinion is not a sufficient substitute for objective evidence. Thus, the Examiner has not established a *prima facie* case of obviousness in rejecting claim 42.

C.2. The following claim limitations are not taught, either singly or in combination, by *Stevelim* in view of *Lovelace* and further in view of Appellants' admittance of prior art.

Regarding claims 2 and 22, the Examiner admits that neither *Stevelim* nor *Lovelace* disclose the limitations in these claims. See Office Action from 08/23/2005, p. 31. Despite this fact, the Examiner has rejected claims 2 and 22 based on a modification of the combination of *Stevelim* and *Lovelace*. Claims 2 and 22 depend from claims 1 and 21, respectively, with the additional limitation of locking said first and second entries in said non-volatile memory with a hardware locking mechanism. The Examiner states that "it would have been obvious to one of ordinary skill in the art to further modify *Stevelim* and *Lovelace*'s combination method and system...." See Office Action 04/05/2005, p.31. Appellants respectfully traverse. The Examiner has not presented a source for his motivation for modifying *Stevelim* with *Lovelace*, for at least the reasons presented previously in this paper. Claims 2 and 22 are allowable for at least the reasons presented in support of claims 1 and 21, respectively, in this paper. The Examiner's unsupported subjective opinion is not a sufficient substitute for objective evidence. *Lovelace* teaches a method that is operable on a computer system for one single operating system. *Lovelace*, col. 2, lines 5-8; col. 2, lines 51-52; Fig. 3, element 350; Claim 1. *Lovelace* does not teach or suggest loading or booting more than one, i.e., a first and second, version of a bootable program on a single computer system. Thus, the method of *Lovelace* is not operable as a method comprising first and second entries (corresponding to first and second versions), as in claims 2 and 22, in combination with *Stevelim*, because none of the references teach or suggest the circuitry or a method for steps necessary to determine which version to boot using authentication, or an equivalent element therefor. Contrary to the Examiner's assertion, the combination of *Stevelim* and *Lovelace* would be inoperable and unable to provide a system capable of authenticated boot management among multiple boot programs. If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984), M.P.E.P. §2143.01. Thus the

Examiner has not established a *prima facie* case of obviousness in rejecting claims 2 and 22.

Appellants acknowledge the Examiner's statement that the limitations recited by claims 10 and 30 and claims 2 and 22, respectively, are substantially similar. Claims 10 and 30 are therefore allowable for at least the reasons and arguments presented in this paper in support of claims 2 and 22, respectively. Appellants respectfully assert that the Examiner has failed to present a *prima facie* case of obviousness in rejecting claims 10 and 30.

Regarding claim 32, the Examiner admits that neither *Stevelim* nor *Lovelace* disclose the limitations in this claim. See Office Action from 08/23/2005, p. 32. Despite this fact, the Examiner has rejected claim 32 based on a modification of the combination of *Stevelim* and *Lovelace*. Claim 32 depends from claim 31 with the additional limitation of locking said first and second entries in said non-volatile memory with a hardware locking mechanism. The Examiner states that "it would have been obvious to one of ordinary skill in the art to further modify *Stevelim* and *Lovelace*'s combination method and system...." See Office Action 04/05/2005, p. 32. Appellants respectfully traverse. The Examiner has not presented a source for his motivation for modifying *Stevelim* with *Lovelace*, for at least the reasons presented previously in this paper. Claim 32 is allowable for at least the reasons presented in support of claim 31 in this paper. The Examiner's unsupported subjective opinion is not a sufficient substitute for objective evidence. *Lovelace* teaches a method that is operable on a computer system for one single operating system. *Lovelace*, col. 2, lines 5-8; col. 2, lines 51-52; Fig. 3, element 350; Claim 1. *Lovelace* does not teach or suggest loading or booting more than one, i.e., a first and second, version of a bootable program on a single computer system. Thus, the method of *Lovelace* is not operable as a method comprising first and second entries (corresponding to first and second versions), as in claim 32, in combination with *Stevelim*, because none of the references teach or suggest the circuitry or a method for steps necessary to determine which version to boot using authentication, or an equivalent element therefor. Contrary to the Examiner's assertion, the combination of *Stevelim* and *Lovelace* would be inoperable and unable to provide a system capable of authenticated boot management among multiple boot programs. If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984), M.P.E.P. §2143.01. Thus the Examiner has not established a *prima facie* case of obviousness in rejecting claim 32.

Claim 33 depends from claim 31 with the additional limitation of a boot program that is an operating system. Therefore, the Examiner has not presented a *prima facie* case of obviousness in rejecting claim 33 for at least the reasons presented above in support of claim 31.

Regarding claim 42, the Examiner admits that neither *Stevelim* nor *Lovelace* disclose the limitations in this claim. See Office Action from 08/23/2005, p. 33. Despite this fact, the Examiner has rejected claim 42 based on a modification of the combination of *Stevelim* and *Lovelace*. Claim 42 depends from claim 41 with the additional limitation of locking said first and second entries in said non-volatile memory with a hardware locking mechanism. The Examiner states that "it would have been obvious to one of ordinary skill in the art to further modify *Stevelim* and *Lovelace*'s combination method and system...." See Office Action 04/05/2005, p. 33. Appellants respectfully traverse. The Examiner has not presented a source for his motivation for modifying *Stevelim* with *Lovelace*, for at least the reasons presented previously in this paper. Claim 42 is allowable for at least the reasons presented in support of claim 41 in this paper. The Examiner's unsupported subjective opinion is not a sufficient substitute for objective evidence. *Lovelace* teaches a method that is operable on a computer system for one single operating system. *Lovelace*, col. 2, lines 5-8; col. 2, lines 51-52; Fig. 3, element 350; Claim 1. *Lovelace* does not teach or suggest loading or booting more than one, i.e., a first and second, version of a bootable program on a single computer system. Thus, the method of *Lovelace* is not operable as a method comprising first and second entries (corresponding to first and second versions), as in claim 42, in combination with *Stevelim*, because none of the references teach or suggest the circuitry or a method for steps necessary to determine which version to boot using authentication, or an equivalent element therefor. Consequently, contrary to the Examiner's assertion, the combination of *Stevelim* and *Lovelace* would be inoperable and unable to provide a system capable of authenticated boot management among multiple boot programs. If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984), M.P.E.P. §2143.01. Thus the Examiner has not established a *prima facie* case of obviousness in rejecting claim 42.

- D. Claims 12, 20, 44-45, and 54 are not properly rejected under 35 U.S.C. §103(a) as being unpatentable over *Stevelim* in view of *Lovelace* and *Rickey* and further in view of Appellants' admittance of prior art.

Claims 12, 20, 44-45, and 54 are rejected under 35 U.S.C. §103(a) as being unpatentable over *Stevelim* in view of *Lovelace* and *Rickey* and further in view of Appellants' admittance of prior art.

- D.1. The Examiner has not provided a source of motivation for combining *Stevelim* with *Lovelace*, nor for modifying this combination.

A *prima facie* showing of obviousness requires the Examiner to establish, *inter alia*, that the prior art references teach or suggest, either alone or in combination, all of the limitations of the claimed invention, and the Examiner must provide a motivation or suggestion to combine or modify the prior art reference to make the claimed inventions. M.P.E.P. §2142. The showings must be clear and particular and supported by objective evidence. *In re Lee*, 277 F.3d 1338, 1343, 61 U.S.P.Q.2d 1430, 1433-34 (Fed. Cir. 2002); *In re Kotzab*, 217 F.3d 1365, 1370, 55 U.S.P.Q.2d 1313, 1317 (Fed. Cir. 2000); *In re Dembiczak*, 50 U.S.P.Q.2d 1614, 1617 (Fed. Cir. 1999). Broad conclusory statements regarding the teaching of multiple references, standing alone, are not evidence. *Id.* In order to establish a *prima facie* case of obviousness, it is necessary for the Examiner to present objective evidence, preferably in the form of some teaching, suggestion, incentive or inference in the applied prior art. *Ex parte Levengood*, 28 U.S.P.Q.2d 1300, 1301 (BPAI 1993); *Ashland Oil, Inc. v. Delta Resins and Refractories, Inc.*, 776 F.2d 281, 227 U.S.P.Q. 657 (CA FC 1985).

The Examiner does not recite a source of motivation for combining *Stevelim* with *Lovelace* in construing the rejection to claims 12, 20, 44-45, and 54. The Examiner is apparently assuming that the combination of *Stevelim* and *Lovelace* is an established fact. Appellants respectfully traverse. The Examiner has not presented a source for his motivation for modifying *Stevelim* with *Lovelace*, for at least the reasons presented previously in this paper. The Examiner's unsupported subjective opinion is not a sufficient substitute for objective evidence. Therefore, the Examiner has failed to establish a *prima facie* case of obviousness in rejecting claims 12, 20, 44-45, and 54.

Regarding claim 12, the Examiner recites that: "It would have been obvious...to further modify *Stevelim*, *Lovelace*, and *Rickey's* combination computer system according to the

limitation recited in claim 12 as it would prevent changing the contents of said first and second entries either by accident or by a virus after POST is finished and an OS is loaded." *See* Office Action from 08/23/2005, p. 34, emphasis added. Appellants respectfully traverse. The Examiner has cited no source for the motivation to modify the unsupported combination of *Stevelim* and *Lovelace* and *Rickey*. The Examiner's unsupported subjective opinion is not a sufficient substitute for objective evidence. Thus, the Examiner has not established a *prima facie* case of obviousness in rejecting claim 12.

Regarding claim 54, the Examiner recites that: "It would have been obvious...to further modify the combination method of Stevelim, Lovelace, and Rickey according to the limitations recited in claim 54. One..would have been motivated to do so as it would prevent modification of the memory content when the active and alternate entries do not need to be changed such as by a virus." *See* Office Action from 08/23/2005, p. 35, emphasis added. Appellants respectfully traverse. The Examiner has cited no source for the motivation to modify the unsupported combination of *Stevelim* and *Lovelace* and *Rickey*. The Examiner's unsupported subjective opinion is not a sufficient substitute for objective evidence. Thus, the Examiner has not established a *prima facie* case of obviousness in rejecting claim 54.

D.2. The following claim limitations are not taught, either singly or in combination, by *Stevelim* in view of *Lovelace* and further in view of Appellants' admittance of prior art.

Regarding claim 12, the Examiner admits that neither *Stevelim* nor *Lovelace* disclose the limitations in this claim. *See* Office Action from 08/23/2005, pp. 33-34. Despite this fact, the Examiner has rejected claim 12 based on a modification of the combination of *Stevelim*, *Lovelace*, and *Rickey*. Claim 12 depends from claim 11 with the additional limitation of locking said first and second entries in said non-volatile memory with a hardware locking mechanism. The Examiner states that "it would have been obvious to one of ordinary skill in the art to further modify *Stevelim*, *Lovelace*, and *Rickey*'s combination computer system...." *See* Office Action 04/05/2005, p. 34. Appellants respectfully traverse. The Examiner has not presented a source for his motivation for modifying *Stevelim* with *Lovelace*, for at least the reasons presented previously in this paper. Claim 12 is allowable for at least the reasons presented in support of claim 11 in this paper. The Examiner's unsupported subjective opinion is not a sufficient substitute for objective evidence. *Lovelace* teaches a method that is operable on a computer

system for one single operating system. *Lovelace*, col. 2, lines 5-8; col. 2, lines 51-52; Fig. 3, element 350; Claim 1. *Lovelace* does not teach or suggest loading or booting more than one, i.e., a first and second, version of a bootable program on a single computer system. Thus, the method of *Lovelace* is not operable as a method comprising first and second entries (corresponding to first and second versions), as in claim 12, in combination with *Stevelim* and *Rickey*, because none of the references teach or suggest the circuitry or a method for steps necessary to determine which version to boot using authentication, or an equivalent element therefor. Consequently, contrary to the Examiner's assertion, the combination of *Stevelim*, *Lovelace* and *Rickey* would be inoperable and unable to provide a system capable of authenticated boot management among multiple boot programs. If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984), M.P.E.P. §2143.01. Thus the Examiner has not established a *prima facie* case of obviousness in rejecting claim 12.

Appellants acknowledge the Examiner's statement that the limitations recited by claim 20 and claim 12 are substantially similar. Claim 20 is therefore allowable for at least the reasons and arguments presented in this paper in support of claim 12. Appellants respectfully assert that the Examiner has failed to present a *prima facie* case of obviousness in rejecting claim 20.

Appellants acknowledge the Examiner's statement that the limitations recited by claim 44 and claim 32 are substantially similar. Claim 44 is therefore allowable for at least the reasons and arguments presented in this paper in support of claim 32. Appellants respectfully assert that the Examiner has failed to present a *prima facie* case of obviousness in rejecting claim 44.

Claim 45 depends from claim 43 with the additional limitation of a boot program that is an operating system. Therefore, the Examiner has not presented a *prima facie* case of obviousness in rejecting claim 45 for at least the reasons presented above in support of claim 43.

Regarding claim 54, the Examiner admits that neither *Stevelim* nor *Lovelace* disclose the limitations in this claim. *See* Office Action from 08/23/2005, pp. 34-35. Despite this fact, the Examiner has rejected claim 54 based on a modification of the combination of *Stevelim*, *Lovelace*, and *Rickey*. Claim 54 depends from claim 53 with the additional limitation of circuitry for locking said active and alternate entries in said non-volatile memory. The Examiner states

that "it would have been obvious to one of ordinary skill in the art to further modify the combination method of *Stevelim*, *Lovelace*, and *Rickey*" See Office Action 04/05/2005, p. 35. Appellants respectfully traverse. The Examiner has not presented a source for his motivation for modifying *Stevelim* with *Lovelace*, for at least the reasons presented previously in this paper. Claim 54 is allowable for at least the reasons presented in support of claim 53 in this paper. The Examiner's unsupported subjective opinion is not a sufficient substitute for objective evidence. *Lovelace* teaches a method that is operable on a computer system for one single operating system. *Lovelace*, col. 2, lines 5-8; col. 2, lines 51-52; Fig. 3, element 350; Claim 1. *Lovelace* does not teach or suggest loading or booting more than one, i.e., an active and alternate, version of a bootable program on a single computer system. Thus, the method of *Lovelace* is not operable as a method comprising active and alternate entries (corresponding to active and alternate versions), as in claim 54, in combination with *Stevelim* and *Rickey*, because none of the references teach or suggest the circuitry or a method for steps necessary to determine which version to boot using authentication, or an equivalent element therefor. Consequently, contrary to the Examiner's assertion, the combination of *Stevelim*, *Lovelace* and *Rickey* would be inoperable and unable to provide a system capable of authenticated boot management among multiple boot programs. If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984), M.P.E.P. §2143.01. Thus the Examiner has not established a *prima facie* case of obviousness in rejecting claim 54.

- E. Claims 4-6, 24-26, and 37-38 are not properly rejected under 35 U.S.C. §103(a) as being unpatentable over *Stevelim* in view of *Lovelace* and further in view of *Schieve*.

Claims 4-6, 24-26⁵, and 37-38 are rejected under 35 U.S.C. §103(a) as being unpatentable over *Stevelim* in view of *Lovelace* and further in view of *Schieve*.

- E.1. The Examiner has not provided a source of motivation for combining *Stevelim* with *Lovelace* and further with *Schieve*, nor for modifying this combination.

The Examiner does not recite a source of motivation for combining *Stevelim* with *Lovelace* in construing the rejection to claims 4-6, 24-26, and 37-38. The Examiner is apparently assuming that the combination of *Stevelim* and *Lovelace* is an established fact. Appellants

⁵ Appellants assume a typographical error in the Office Action from 08/23/2005, p. 35 in reciting "Claims 4-6, 24-16..." instead of "Claims 4-6, 24-26...."

respectfully traverse. The Examiner has not presented a source for his motivation for modifying *Stevelim* with *Lovelace*, for at least the reasons presented previously in this paper. The Examiner's unsupported subjective opinion is not a sufficient substitute for objective evidence. Therefore, the Examiner has failed to establish a *prima facie* case of obviousness in rejecting claims 4-6, 24-26, and 37-38.

Regarding claim 4, the Examiner recites that: "It would be obvious...in light of *Lovelace* and *Schieve's* teachings to further modify the combination method of Stevelim and Lovelace according to the limitations recited in claims [sic] 4. " *See* Office Action from 08/23/2005, p. 36, emphasis added. The Examiner cites various reasons why one of ordinary skill would be motivated to make the combination, including: [to] "allow for the test of whether the boot components were corrupted to be performed automatically...."; [to] "allow for the testing of corrupted boot components in the multiple OS boot managers disclosed by *Stevelim*." *See* Office Action from 08/23/2005, p. 36-37. Appellants respectfully traverse. The Examiner has provided no objective evidence to indicate the source of the motivation for making the combination. Further, the Examiner has cited no source for the motivation to modify the combination of *Stevelim* and *Lovelace* and *Schieve*. The Examiner's unsupported subjective opinion is not a sufficient substitute for objective evidence. Thus, the Examiner has not established a *prima facie* case of obviousness in rejecting claim 4.

Regarding claim 24, this claim is substantially similar to claim 4, and the Examiner's rejection to claim 24 is substantially similar to the rejection of claim 4. The Examiner has failed to provide a source for the motivation to combine references for at least the reasons presented above for claim 4. Thus, the Examiner has not established a *prima facie* case of obviousness in rejecting claim 24.

Regarding claims 5 and 25, the Examiner recites that: "It would be obvious... to further modify Stevelim, Lovelace, and Schieve's combination invention according to the limitations recited in claims 5 and 25." *See* Office Action from 08/23/2005, p. 40, emphasis added. The Examiner cites why one of ordinary skill would be motivated to modify the combination: "as it would allow for a way to boot into a different OS for repairing any damages done by a virus." *See* Office Action from 08/23/2005, p. 40. Appellants respectfully traverse. The Examiner has provided no objective evidence to indicate the source of the motivation for making the

combination. Further, the Examiner has cited no external source for the motivation to modify the combination of *Stevelim* and *Lovelace* and *Schieve*. The Examiner's unsupported subjective opinion is not a sufficient substitute for objective evidence. Thus, the Examiner has not established a *prima facie* case of obviousness in rejecting claims 5 and 25.

Regarding claims 6 and 26, the Examiner implies a modification of the combination of *Stevelim*, *Lovelace*, and *Schieve* with the statement: "It would have been obvious... in light of Schieve's teachings to halt POST when the second compare result is false." See Office Action from 08/23/2005, p. 40. The Examiner further states that "One ...would be motivated to halt said POST when said second compare result is false as it would help prevent the first and second OS...from being infected with a virus." See Office Action from 08/23/2005, p. 40. This statement provides a possible motivation for performing the method step in claims 6 and 26. However, the Examiner has not indicated the motivation to combine *Stevelim*, *Lovelace*, and *Schieve* in construing the rejection. Thus, the Examiner has provided no objective evidence to indicate the source of the motivation for making the combination. Further, the Examiner has cited no source for the motivation to modify the combination of *Stevelim* and *Lovelace* and *Schieve*, based on objective evidence. The Examiner's unsupported subjective opinion is not a sufficient substitute for objective evidence. Thus, the Examiner has not established a *prima facie* case of obviousness in rejecting claims 6 and 26.

Regarding claims 37 and 38, the Examiner implies a modification of the combination of *Stevelim*, *Lovelace*, and *Schieve* with the statement: "It would have been obvious... to have the compare step be performed by POST in light of Schieve's teachings." See Office Action from 08/23/2005, p. 41. The Examiner cites why one of ordinary skill would be motivated to modify the combination: "as it would allow for the boot components to be tested automatically each time a computer is booted before the OS starts." See Office Action from 08/23/2005, p. 41. Appellants respectfully traverse. The Examiner has provided no objective evidence to indicate the source of the motivation for making the combination. Further, the Examiner has cited no source for the motivation to modify the combination of *Stevelim* and *Lovelace* and *Schieve*. The Examiner's unsupported subjective opinion is not a sufficient substitute for objective evidence. Thus, the Examiner has not established a *prima facie* case of obviousness in rejecting claims 37 and 38.

E.2. The following claim limitations are not taught, either singly or in combination, by *Stevelim* in view of *Lovelace* and further in view of *Schieve*.

Regarding claim 4, the Examiner admits that *Stevelim* does not teach or suggest the limitations in this claim. The Examiner cites *Lovelace* as disclosing:

1. Decrypting a signature in memory using a public installation key (col 5, lines 7-11).
2. Comparing the hash of a BR of a partition to a hash retrieved from memory, returning a first compare result (col 5, lined 59-60).
3. Booting with the bootable program referred to in a partition when the said compare result is true (col 5, lines 61-62). *See* Office Action from 08/23/2005, p. 36.

Appellants respectfully traverse. The Examiner has not addressed the claim language in claim 4. *Lovelace* does not teach or suggest "loading a BR from said active partition entry of said MBR using Power-On-Self-Test (POST) code when said computer system is powered up" as in claim 4, as *Lovelace* does not teach or suggest an active partition entry and *Lovelace* does not teach or suggest using POST code for loading a BR from said active partition entry. *Lovelace* does not teach or suggest "decrypting said first signature in said active entry using a public installation key," as in claim 4, as *Lovelace* does not disclose an active entry. *Lovelace* does not teach or suggest "comparing a hash of said BR of said active partition to a hash of a BR retrieved from said active entry, returning a first compare result; booting with said first version of said bootable program in said active partition when said first compare result is true" as in claim 4, emphasis added. Claim 4 depends on claim 1, wherein "loading first and second versions of said bootable program into first and second partitions of a storage device..." is followed by "assigning said first partition as an active partition.." and "assigning said first entry...as an active entry" as well as "assigning said second entry as an alternate entry." Thus "said first signature", "said active entry" and "said active partition" directly imply the presence of a second and alternate instance of each of these elements in Appellant's invention, contrary to *Lovelace*, which does not teach or suggest secondary or alternative elements. Further, *Lovelace* does not teach or suggest the method step of "retrieving said second signature from said alternate entry when said first compare result is false," which is an additional limitation in claim 4. *Lovelace* does not teach any further actions when a compare result is false. Therefore, *Stevelim*, *Lovelace*, and *Schieve*, taken singly or in combination, do not teach or suggest the limitations in claim 4. The Examiner has not provided objective evidence in support of the rejection. The Examiner's unsupported subjective opinion, that numerous modifications of the combination meet the exact limitations in

claim 4, *see* Office Action from 08/23/2005, pp. 36-37, is not a sufficient substitute for objective evidence. Thus, the Examiner has not established a *prima facie* case of obviousness in rejecting claim 4.

Regarding claim 24, this claim is substantially similar to claim 4, and the Examiner's rejection to claim 24 is substantially similar to the rejection of claim 4. Therefore, *Stevelim*, *Lovelace*, and *Schieve*, taken singly or in combination, do not teach or suggest the limitations in claim 24 for at least the aforementioned reasons cited in support of claim 4. Thus, the Examiner has not established a *prima facie* case of obviousness in rejecting claim 24.

Regarding claims 5 and 25, the Examiner admits that *Stevelim* does not teach the claim limitations, but cites *Lovelace* as disclosing the same subject matter as in the rejection of claim 4. *See* Office Action from 08/23/2005, pp. 36, 39-40. Appellants respectfully traverse. The Examiner has not addressed the claim language in claims 5 and 25. *Lovelace* does not teach or suggest the method steps of "decrypting said second signature in said alternate entry using said public installation key; comparing said hash of said BR of said active partition to a hash of a BR retrieved from said alternate entry, returning a second compare result; clearing said active entry from said non-volatile memory when said second compare result is true; moving contents from said alternative entry to said active entry; and booting with said alternate version identified by said active entry," as in claims 5 and 25. *Lovelace* teaches a method that is operable on a computer system for one single operating system. *Lovelace*, col. 2, lines 5-8; col. 2, lines 51-52; Fig. 3, element 350; Claim 1. *Lovelace* does not teach or suggest loading or booting more than one, i.e., an active and alternate, version of a bootable program on a single computer system. Thus, the method of *Lovelace* is not operable as a method comprising active and alternate entries (corresponding to active and alternate versions of a BP), as in claims 5 and 25, in combination with *Stevelim* and *Schieve*, because none of the references teach or suggest the circuitry or a method for steps necessary to determine which version to boot, or an equivalent element therefor. Consequently, contrary to the Examiner's assertion, the combination of *Stevelim*, *Lovelace* and *Schieve* would be inoperable and unable to provide a system capable of authenticated boot management among multiple boot programs. If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984), M.P.E.P. §2143.01. Thus the Examiner has not established a

prima facie case of obviousness in rejecting claims 5 and 25.

Regarding claims 6 and 26, the Examiner admits that *Stevelim* and *Lovelace* do not teach the claim limitation, but cites *Schieve* as disclosing "that the last step performed by POST is to load the OS (col 2, lines 37-38)." See Office Action from 08/23/2005, p. 40. Appellants respectfully traverse. The reference discloses that: "Lastly, POST initiates the loading of the operating system, 'booting' the computer." *Schieve*, col. 2, lines 37-38. However, *Schieve* does not teach or suggest "halting said POST when said second compare result is false," as in claims 6 and 26. The Examiner has not addressed the claim language in claims 6 and 26. The Examiner has provided no objective evidence that the claim limitations in claims 6 and 26 are taught or suggested in the prior art. The Examiner's unsupported subjective opinion is not a sufficient substitute for objective evidence. Thus the Examiner has not established a *prima facie* case of obviousness in rejecting claims 6 and 26.

Regarding claims 37 and 38, the Examiner admits that neither *Stevelim* nor *Lovelace* disclose the limitations in these claims. The Examiner cites *Schieve* as disclosing: "POST is a prior art diagnostics process which is a series of tests that the computer performs on some of the core components each time a computer is turned on (col2, lines 24-33)." See Office Action from 08/23/2005, p. 41. The Examiner states that: "It would have been obvious...to have the compare step be performed by POST code in light of *Schieve*'s teachings.." See Office Action from 08/23/2005, p. 41. Appellants respectfully traverse. *Schieve* does not teach or suggest "comparing selected data in said active entry in said version management table to selected data pointed to by said active partition entry of said MBR...", as in claims 31 and 34, and *Schieve* does not teach or suggest a method, referring respectively thereto, "wherein said compare step is performed by ...(POST) code," as in claims 37 and 38. The Examiner has provided no objective evidence that the claim limitations in claims 37 and 38 are taught or suggested in the prior art. The Examiner's unsupported subjective opinion is not a sufficient substitute for objective evidence. Thus, the Examiner has not established a *prima facie* case of obviousness in rejecting claims 37 and 38.

- F. Claims 14-16 and 49-50 are not properly rejected under 35 U.S.C. §103(a) as being unpatentable over *Stevelim* in view of *Lovelace* and *Rickey* further in view of *Schieve*.

Claims 14-16 and 49-50 are rejected under 35 U.S.C. §103(a) as being unpatentable over *Stevelim* in view of *Lovelace* and *Rickey* further in view of *Schieve*.

- F.1. The Examiner has not provided a source of motivation for combining *Stevelim* with *Lovelace* and *Rickey* further in view of *Schieve*, nor for modifying this combination.

The Examiner does not recite a source of motivation for combining *Stevelim* with *Lovelace* in construing the rejection to claims 14-16 and 49-50. Nor does the Examiner provide a source for the motivation to combine *Stevelim*, *Lovelace*, *Rickey* and *Schieve*. The Examiner is apparently assuming that the combination of *Stevelim* and *Lovelace* is an established fact. Appellants respectfully traverse. The Examiner has not presented a source for his motivation for modifying *Stevelim* with *Lovelace*, for at least the reasons presented previously in this paper. Additionally, the Examiner's reference to the rejection of claims 4, 5, 6, and 37-38, respectively, does not provide a motivation or a source of the motivation to combine *Stevelim*, *Lovelace*, *Rickey* and *Schieve*. Furthermore, the Examiner's reference to the rejection of claims 4, 5, 6, and 37-38, respectively, does not provide a motivation or a source of the motivation to modify the combination of *Stevelim*, *Lovelace*, *Rickey* and *Schieve*. Therefore, the Examiner has failed to establish a *prima facie* case of obviousness in rejecting claims 14-16 and 49-50.

- F.2. The following claim limitations are not taught, either singly or in combination, by *Stevelim* in view of *Lovelace* and *Rickey* further in view of *Schieve*.

Appellants acknowledge the Examiner's statement that the limitations recited by claims 4, 5 and 6 and claims 14, 15 and 16, respectively, are substantially similar, except that claims 14, 15 and 16 refer to a computer system comprising circuitry which performs the methods of claims 4, 5 and 6, respectively. Claims 14, 15 and 16 are therefore allowable for at least the reasons and arguments presented in this paper in support of claims 4, 5 and 6, respectively. Therefore, the Examiner has failed to establish a *prima facie* case of obviousness in rejecting claims 14-16.

Appellants acknowledge the Examiner's statement that the limitations recited by claims 37-38 and claims 49-50, respectively, are substantially similar, except that claims 49-50 refer to computer system which implements the methods of claims 37-38. Claims 49-50 are therefore allowable for at least the reasons and arguments presented in this paper in support of claims 37-38, respectively. Therefore, the Examiner has failed to establish a *prima facie* case of obviousness in rejecting claims 49-50.

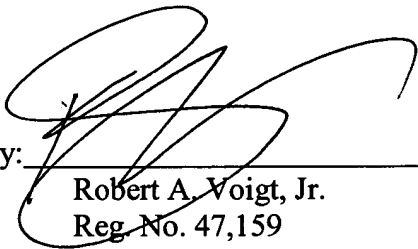
VIII. CONCLUSION

For the reasons noted above, the rejections of claims 1-54 are in error. Appellants respectfully request reversal of the rejections and allowance of claims 1-54.

Respectfully submitted,

WINSTEAD SECHREST & MINICK P.C.

Attorneys for Appellants

By: 

Robert A. Voigt, Jr.
Reg. No. 47,159

Kelly K. Kordzik
Reg. No. 36,571

P.O. Box 50784
Dallas, Texas 75201
(512)370-2832

CLAIMS APPENDIX

1. A method for booting a computer system with first and second versions of a bootable program comprising the steps of:

loading said first and second versions of said bootable program into first and second partitions of a storage device coupled to said computer system;

hashing a boot record (BR) of said first and second versions of said bootable program producing respective first and second digests;

signing said first and second digests using a cryptographic signature engine and a private installation key producing first and second signatures;

storing said first and second signatures with additional data defining said first and second versions of said bootable program in first and second entries in a non-volatile memory coupled to said computer system;

assigning said first partition as an active partition of said storage device by updating an active partition entry of a partition table of a master boot record (MBR) of said storage device, said active partition entry indicating which version of said BP is booted on a power up of said computer system;

assigning said first entry corresponding to said first version of said bootable program as an active entry in said non-volatile memory; and

assigning said second entry corresponding to said second version of said bootable program as an alternate entry in said non-volatile memory.

2. The method of claim 1 further comprising the step of:
locking said first and second entries in said non-volatile memory with a hardware locking mechanism of said computer system preventing modification of contents of said first and second entries.
3. The method of claim 1, wherein said bootable program is an operating system of said computer system.
4. The method of claim 1 further comprising the steps of:
loading a BR from said active partition entry of said MBR using Power-On-Self-Test (POST) code when said computer system is powered up;
decrypting said first signature in said active entry using a public installation key;
comparing a hash of said BR of said active partition to a hash of a BR retrieved from said active entry, returning a first compare result;
booting with said first version of said bootable program in said active partition when said first compare result is true; and
retrieving said second signature from said alternate entry when said first compare result is false.
5. The method of claim 4 further comprising the steps of:
decrypting said second signature in said alternate entry using said public installation key;
comparing said hash of said BR of said active partition to a hash of a BR retrieved from said alternate entry, returning a second compare result;
clearing said active entry from said non-volatile memory when said second compare result is true;
moving contents from said alternative entry to said active entry; and
booting with said alternate version identified by said active entry.

6. The method of claim 5 further comprising the step of:
halting said POST when said second compare result is false.
7. The method of claim 1 further comprising the step of:
monitoring a third entry of said non-volatile memory for an indication said third entry is valid.
8. The method of claim 7 further comprising the step of:
moving contents of said second entry to said first entry in response to said valid indication.
9. The method of claim 8 further comprising the steps of:
moving contents of said third entry to said second entry;
marking said second partition corresponding to said second version of said bootable program as said active partition entry in said master boot record; and
booting said version of said bootable program in said active partition.
10. The method of claim 9 further comprising the step of:
locking said first and second entries in said non-volatile memory with a hardware locking mechanism of said computer system preventing modification of contents of said first and second entries.

11. A computer system comprising:

a central processing unit (CPU);

a random access memory (RAM);

an electronically erasable programmable read only memory (EEPROM);

an I/O adapter;

a disk storage system coupled to said I/O adapter; and

a bus system coupling said CPU to said EEPROM, said I/O adapter, and said RAM,
wherein said CPU further comprises;

circuitry for loading said first and second versions of said bootable program into first and second partitions of a storage device coupled to said computer system;

circuitry for hashing a boot record (BR) of said first and second versions of said bootable program producing respective first and second digests;

circuitry for signing said first and second digests using a cryptographic signature engine and a private installation key producing first and second signatures;

circuitry for storing said first and second signatures with additional data defining said first and second versions of said bootable program in first and second entries in a non-volatile memory coupled to said computer system;

circuitry for assigning said first partition as an active partition of said storage device by updating an active partition entry of a partition table of a master boot record (MBR) of said storage device, said active partition entry indicating which version of said BP is booted on a power up of said computer system;

circuitry for assigning said first entry corresponding to said first version of said bootable program as an active entry in said non-volatile memory; and

circuitry for assigning said second entry corresponding to said second version of said bootable program as an alternate entry in said non-volatile memory.

12. The computer system of claim 11 further comprising:

locking said first and second entries in said non-volatile memory with a hardware locking mechanism of said computer system preventing modification of contents of said first and second entries.

13. The computer system of claim 11, wherein said bootable program is an operating system of said computer system.

14. The computer system of claim 11 further comprising:

circuitry for loading a BR from said active partition entry of said MBR using Power-On-Self-Test (POST) code when said computer system is powered up;

circuitry for decrypting said first signature in said active entry using said public installation key;

circuitry for comparing a hash of said BR of said active partition to a hash of a BR retrieved from said active entry, returning a first compare result;

circuitry for booting with said first version of said bootable program in said active partition when said first compare result is true; and

circuitry for retrieving said second signature from said alternate entry when said first compare result is false.

15. The computer system of claim 14 further comprising:
- circuitry for decrypting said second signature in said alternate entry using said public installation key;
 - circuitry for comparing said hash of said BR of said active partition to a hash of a BR retrieved from said alternate entry, returning a second compare result;
 - circuitry for clearing said active entry from said non-volatile memory when said second compare result is true;
 - circuitry for moving contents from said alternative entry to said active entry; and
 - circuitry for booting with said alternate version identified by said active entry.
16. The computer system of claim 15 further comprising:
- circuitry for halting said POST when said second compare result is false.
17. The computer system of claim 11 further comprising:
- circuitry for monitoring a third entry of said non-volatile memory for an indication said third entry is valid.
18. The computer system of claim 17 further comprising:
- circuitry for moving contents of said second entry to said first entry in response to said valid indication.
19. The computer system of claim 18 further comprising:
- circuitry for moving contents of said third entry to said second entry;
 - circuitry for marking said second partition corresponding to said second version of said bootable program as said active partition entry in said master boot record; and
 - circuitry for booting said version of said bootable program in said active partition.

20. The computer system of claim 19 further comprising:

circuitry for locking said first and second entries in said non-volatile memory with a hardware locking mechanism of said computer system preventing modification of contents of said first and second entries.

21. A computer program product for booting a computer system having first and second versions of a bootable program, said computer program product embodied in a machine readable medium, including programming for a processor, said computer program comprising a program of instructions for performing the program steps of:

loading said first and second versions of said bootable program into first and second partitions of a storage device coupled to said computer system;

hashing a boot record (BR) of said first and second versions of said bootable program producing respective first and second digests;

signing said first and second digests using a cryptographic signature engine and a private installation key producing first and second signatures;

storing said first and second signatures with additional data defining said first and second versions of said bootable program in first and second entries in a ~~said~~ non-volatile memory coupled to said computer system;

assigning said first partition as an active partition of said storage device by updating an active partition entry of a partition table of a master boot record (MBR) of said storage device, said active partition entry indicating which version of said BP is booted on a power up of said computer system;

assigning said first entry corresponding to said first version of said bootable program as an active entry in said non-volatile memory; and

assigning said second entry corresponding to said second version of said bootable program as an alternate entry in said non-volatile memory.

22. The computer program product of claim 21 further comprising the step of:

locking said first and second entries in said non-volatile memory with a hardware locking mechanism of said computer system preventing modification of contents of said first and second entries.

23. The computer program product of claim 21, wherein said bootable program is an operating system of said computer system.

24. The computer program product of claim 21 further comprising the steps of:

loading a BR from said active partition with Power-On-Self-Test (POST) code when said computer system is powered up;

decrypting said first signature in said active entry using a public installation key;

comparing a hash of said BR of said active partition to a hash of a BR retrieved from said active entry, returning a first compare result;

booting with said first version of said bootable program in said active partition when said first compare result is true; and

retrieving said second signature from said alternate entry when said first compare result is false.

25. The computer program product of claim 24 further comprising the steps of:
- decrypting said second signature in said alternate entry using said public installation key;
 - comparing said hash of said BR of said active partition to a hash of a BR retrieved from said alternate entry, returning a second compare result;
 - clearing said active entry from said non-volatile memory when said second compare result is true;
 - moving contents from said alternative entry to said active entry; and
 - booting with said alternate version identified by said active entry.
26. The computer program product of claim 25 further comprising the step of:
- halting said POST when said second compare result is false.
27. The computer program product of claim 21 further comprising the step of:
- monitoring a third entry of said non-volatile memory for an indication said third entry is valid.
28. The computer program product of claim 27 further comprising the step of:
- moving contents of said second entry to said first entry in response to said valid indication.
29. The computer program product of claim 28 further comprising the steps of:
- moving contents of said third entry to said second entry;
 - marking said second partition corresponding to said second version of said bootable program as said active partition entry in said master boot record; and
 - booting said version of said bootable program in said active partition.

30. The computer program product of claim 29 further comprising the step of:

locking said first and second entries in said non-volatile memory with a hardware locking mechanism of said computer system preventing modification of contents of said first and second entries.

31. A method for booting a computer system with first and second versions of a bootable program (BP) comprising the steps of:

loading said first and second versions of said bootable program into first and second partitions of a storage device coupled to said computer system;

identifying said first version as an active partition in a master boot record (MBR) by placing data defining said first version in an active partition entry, said active partition entry indicating which version of said BP is booted on a power up of said computer system;

maintaining a version management table in a non-volatile memory wherein data placed in an active entry indicates which version of said BP corresponds to an active version and wherein data placed in an alternate entry indicates which version of said BP corresponds to an alternate version;

comparing selected data in said active entry in said version management table to selected data pointed to by said active partition entry of said MBR returning a first compare result; and

booting with said version in said active partition if said first compare result is true.

32. The method of claim 31, wherein said active and alternate entries in said version management table are locked with a hardware read only locking mechanism at selected times.

33. The method of claim 31, wherein said bootable program is an operating system of said computer system.

34. The method of claim 31 further comprising the steps of:

replacing said data in said active entry with said data in said alternate entry if said first result is false;

comparing selected data in said active entry in said version management table to selected data pointed to by said active partition entry of said MBR returning a second compare result; and

booting with said alternate version in said active partition if said second compare result is true.

35. The method of claim 34 further comprising the step of:

stopping booting of said computer system if said second compare result is false.

36. The method of claim 31, wherein said active partition pointed to by said active partition entry in said MBR is changed in response to a version management program command sequence.

37. The method of claim 31, wherein said compare step is performed by Power-On Self-Test (POST) code.

38. The method of claim 34, wherein said compare step is performed by Power-On Self-Test (POST) code.

39. The method of claim 31 further comprising the step of:

determining when contents of a third entry of said non-volatile memory are valid.

40. The method of claim 39 further comprising the step of:

moving contents of said alternate entry to said active entry when said contents of said third entry are valid.

41. The method of claim 40 further comprising the steps of:
- moving contents of said third entry to said alternate entry;
 - marking a second partition corresponding to said second version of said bootable program as said active partition in said MBR; and
 - booting said version of said bootable program in said active partition.
42. The method of claim 41 further comprising the step of:
- locking said active and alternate entries in said non-volatile memory to prevent a modification of contents of said active and alternate entries.

43. A computer system comprising:

a central processing unit (CPU);

a random access memory (RAM);

an electronically erasable programmable read only memory (EEPROM);

an I/O adapter;

a disk storage system coupled to said I/O adapter; and

a bus system coupling said CPU to said EEPROM, said I/O adapter, and said RAM, wherein said CPU further comprises;

circuitry for loading said first and second versions of said bootable program into first and second partitions of a storage device coupled to said computer system;

circuitry for identifying said first version as an active partition in a master boot record (MBR) by placing data defining said first version in an active partition entry, said active partition entry indicating which version of said BP is booted on a power up of said computer system;

circuitry for maintaining a version management table in a non-volatile memory wherein data placed in an active entry indicates which version of said BP corresponds to an active version and wherein data placed in an alternate entry indicates which version of said BP corresponds to an alternate version;

circuitry for comparing selected data in said active entry in said version management table to selected data pointed to by said active partition entry of said MBR returning a first compare result; and

circuitry for booting with said version in said active partition if said first compare result is true.

44. The computer system of claim 43, wherein said active and alternate entries in said version management table are locked with a hardware read only locking mechanism at selected times.

45. The computer system of claim 43, wherein said bootable program is an operating system of said computer system.

46. The computer system of claim 43 further comprising:

circuitry for replacing said data in said active entry with said data in said alternate entry if said first result is false;

circuitry for comparing selected data in said active entry in said version management table to selected data pointed to by said active partition entry of said MBR returning a second compare result; and

circuitry for booting with said alternate version in said active partition if said second compare result is true.

47. The computer system of claim 46 further comprising:

circuitry for stopping booting said computer system if said second compare result is false.

48. The computer system of claim 43, wherein said active partition pointed to by said active partition entry in said MBR is changed in response to a version management program command sequence.

49. The computer system of claim 43, wherein said compare step is performed by Power-On Self-Test (POST) circuitry.

50. The computer system of claim 46, wherein said compare is performed by Power-On Self-Test (POST) circuitry.

51. The computer system of claim 43 further comprising:

circuitry for determining when contents of a third entry of said non-volatile memory are valid.

52. The computer system of claim 51 further comprising:
circuitry for moving contents of said alternate entry to said active entry when said contents of said third entry are valid.
53. The computer system of claim 52 further comprising:
circuitry for moving contents of said third entry to said alternate entry;
circuitry for marking a second partition corresponding to said second version of said bootable program as said active partition in said MBR; and
circuitry for booting said version of said bootable program in said active partition.
54. The computer system of claim 53 further comprising:
circuitry for locking said active and alternate entries in said non-volatile memory to prevent modification of contents of said active and alternate entries.

EVIDENCE APPENDIX

No evidence was submitted pursuant to §§1.130, 1.131, or 1.132 of 37 C.F.R. or of any other evidence entered by the Examiner and relied upon by Appellants in the Appeal.

RELATED PROCEEDINGS APPENDIX

There are no related proceedings to the current proceeding.